Activity Counter

Stand-Alone 12 Channel Data Acquisition, PN S012

User Instructions

Table of Contents:

Package Contents

- 1 x Activity Counter, PN SO12
- 2 AA Batteries (Installed)
- 1 x Power Supply PN PS-UNI-5V4A
    - Country Specific Input Blade Adapter
- Package Contents list (this page)

Download "SO12 User Instructions" from:

https://www.starrlifesciences.com/resource/activity-counter-instructions/

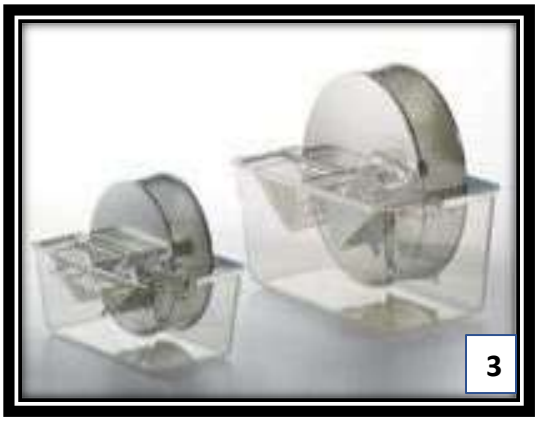
Activity Counter
PN: SO12

Power Supply
PN: PS-UNI-5V4A

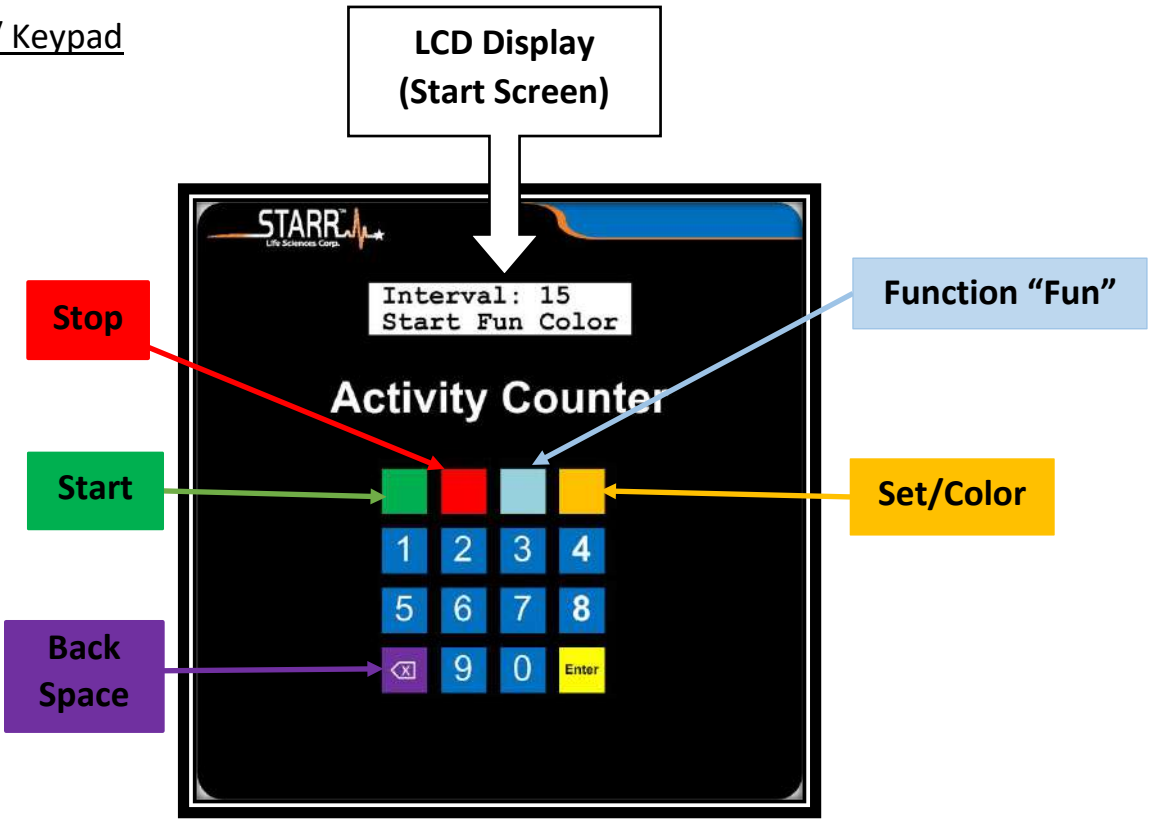
Overview

The Activity Counter (PN S012) is a stand-alone 12 channel data acquisition system. The S012 is a practical solution for collecting activity data from up to 12 subjects without the need for a VitalView® software license or a host computer in the lab space. Data is recorded to a standard USB flash drive and formatted as ASCII delimited (Comma Separated Values/.csv) files. The Activity Counter is compatible with Starr Life Sciences' In-Cage Running Wheels, IR Motion Detector or SNSR-TPRW magnetic hall effect sensor (use with Tecniplast® Activity Cage Systems).

1. **VV-ICRW-W/SNSR** – In-Cage Running Wheel with magnetic sensor included
2. **VV-SNSR-ICRW-MAG**: Magnetic sensor sold separately
3. **VV-SNSR-TPRW**: Hall Effect Sensor for use with Tecniplast Activity Cage Systems
4. **VV-SNSR-IRMOT**: Infrared Motion Detector

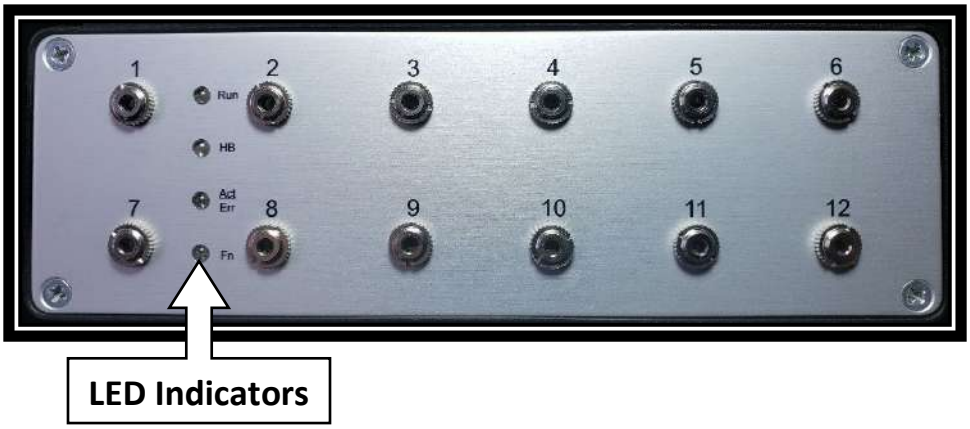


Top Panel / Keypad

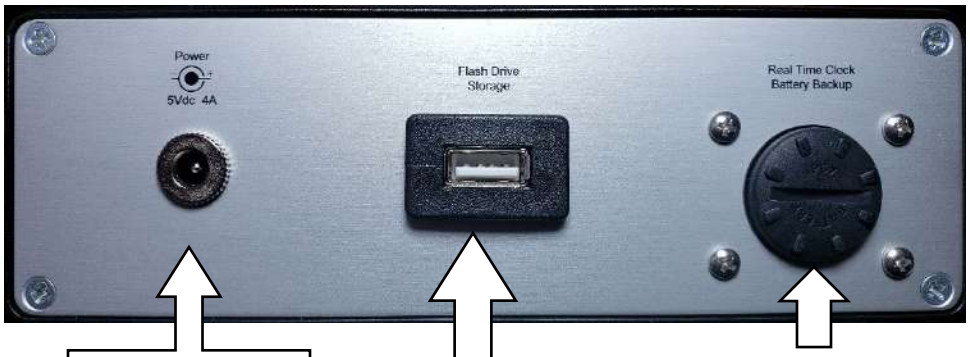


Bottom Panel

Front Panel 12 x 2.5mm mono jack inputs



Back Panel

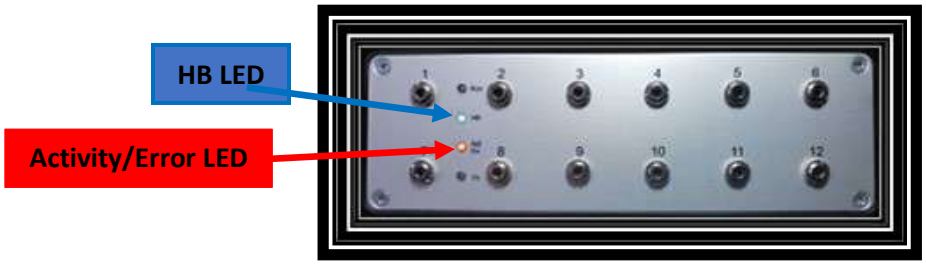


2 x AA Batteries (included)

- **System clock will reset when batteries are removed**
- **Correct orientation shown**
- **Check batteries periodically for corrosion**
- **Change batteries every 5 years**

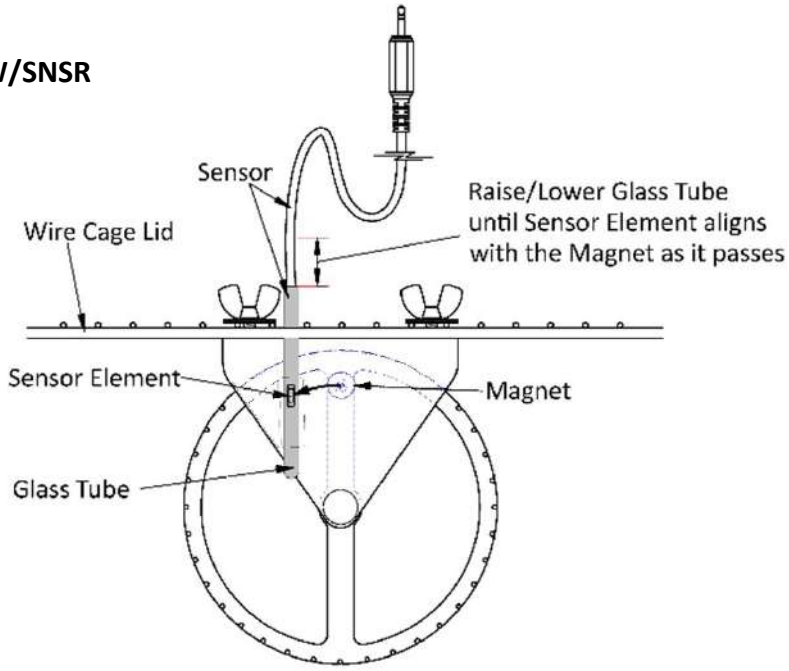
Hardware Setup

- Place the Activity Counter near the cages of the subject(s).
- Insert a USB flash drive into the USB Port
    - **Note: Activity Counter can't collect data without a USB flash drive inserted – LCD Display message = "Stopped-No Flash"**
- Plug power supply into wall power and the Power Input port.
    - Initialization will take approximately 15 seconds. The system is ready when the LCD Display is active and the blue "HB" LED is blinking.



- Plug compatible devices into the 2.5 mm mono-jack inputs.
    - See Input Specification
- When the Activity Counter is not recording data the red Activity/Error LED acts as a trigger indicator. When an attached sensor is triggered, the LED will illuminate. This can be used to check proper function/alignment of each input before data acquisition is started.

E.g., ICRW-W/SNSR



System Settings

Use the steps below to set/change system settings whenever the system has power and is not collecting data

Set System Date/Time

- Set Date
  - Press the blue Function (Fun) key until the "Set Date" is visible.
  - Press the orange (Set) key
  - Use the number key pad to enter MMDDYYYY
  - Press Enter
- Set Time (24 hr format)
  - Press the blue Function (Fun) key until the "Set Time" is visible.
  - Press the orange (Set) key
  - Use the number key pad to enter the current time in 24hr HHMMSS format
    - E.g. 2:07 PM = 140700
  - Press Enter

Note: If batteries are removed while power is not connected the system time/date will be reset (time = 00:00:00; Date = 01/01/2000)

Set Sample Interval/Period

The Sample Interval is the recurring time period during which sensor trigger events are counted/accumulated. The total activity count is reset to 0 before resuming each subsequent Sample Interval. The Sample Interval setting applies to all 12 channels.

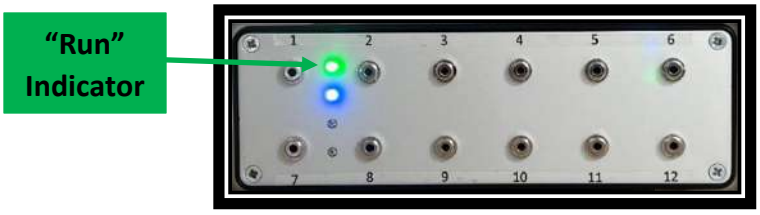
- Press the blue Function (Fun) key until "Set Interval" is visible.
- Press the orange Set key
- Use the number key pad to enter the Sample Interval in seconds
  - Range = 1 to 9999999999999999 (317 million years)
  - 5 minute = 5 x 60 = 300
  - 15 minute = 15 x 60 = 900
  - 1 hour = 60 x 60 = 3600
- Press Enter

Collecting Data

- Press the green “Start” button
  - Each time you start recording a new data file is created
  - The LCD display will show the active Sample Interval [E.g., 10 sec] and the 2 available commands “Stop” and “Color”

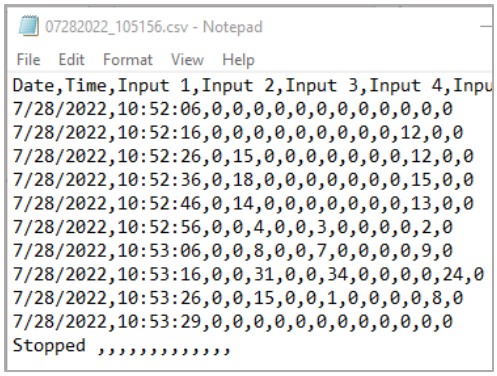
Interval: 10
Stop Color

  - The green “Run” LED should illuminate



Note: In the event of power failure, the current data file will be saved. When power is restored the S012 will automatically create a new data file and resume data collection.

Data is recorded to a file on the USB flash drive in standard ASCII, Comma Separated Value (.csv) format. When recording is started the file name is created from current date/time system information (MMDDYYYY_hhmmss.csv). Files are easily imported into most spreadsheet/data analysis software.


07282022_105156.csv - Notepad

File Edit Format View Help

```
Date,Time,Input 1,Input 2,Input 3,Input 4,Inpu
7/28/2022,10:52:06,0,0,0,0,0,0,0,0,0,0,0,0
7/28/2022,10:52:16,0,0,0,0,0,0,0,0,0,12,0,0
7/28/2022,10:52:26,0,15,0,0,0,0,0,0,0,12,0,0
7/28/2022,10:52:36,0,18,0,0,0,0,0,0,0,15,0,0
7/28/2022,10:52:46,0,14,0,0,0,0,0,0,0,13,0,0
7/28/2022,10:52:56,0,0,4,0,0,3,0,0,0,0,2,0
7/28/2022,10:53:06,0,0,8,0,0,7,0,0,0,0,9,0
7/28/2022,10:53:16,0,0,31,0,0,34,0,0,0,0,24,0
7/28/2022,10:53:26,0,0,15,0,0,1,0,0,0,0,8,0
7/28/2022,10:53:29,0,0,0,0,0,0,0,0,0,0,0,0
Stopped ,,,,,,,,,,,,,
```

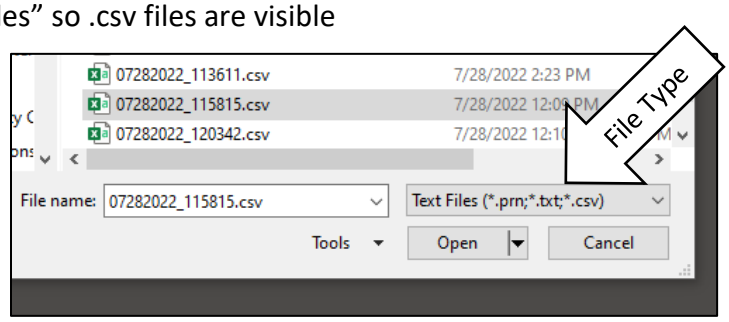
- To halt data collection, press the red “Stop” button on the key pad.
- You can start a new recording or “Eject” the USB drive
- To properly Eject the USB Flash Drive
  - Press the blue Function key until “Eject Flash” is listed on the LCD display
  - Press the orange “Set” key
  - Remove the USB flash drive then press Enter

Recommended: ALWAYS use “Eject” function before removing USB flash drive

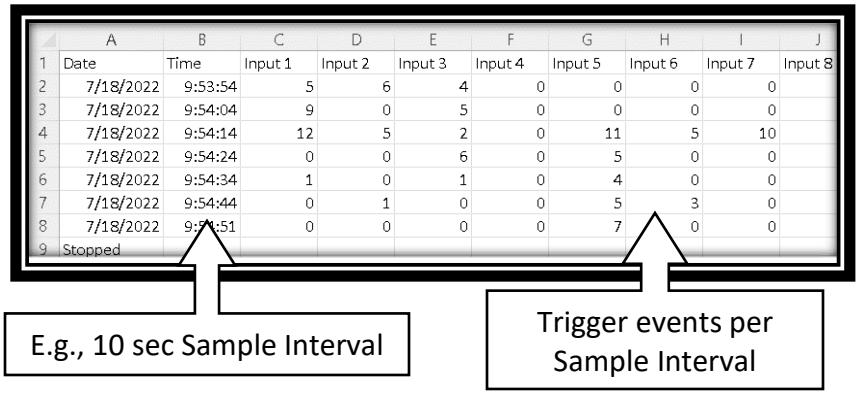
Importing/Analyzing Data

Below is an example of importing a ".csv" file into Microsoft® Excel®

- Insert the USB flash drive into a computer
  - In Excel go to File-> Open. Browse folders and locate the file on the USB flash drive.
  - Set the File Type filter to "Text Files" so .csv files are visible



- Select the data file and click "Open"
- Data should appear as shown below

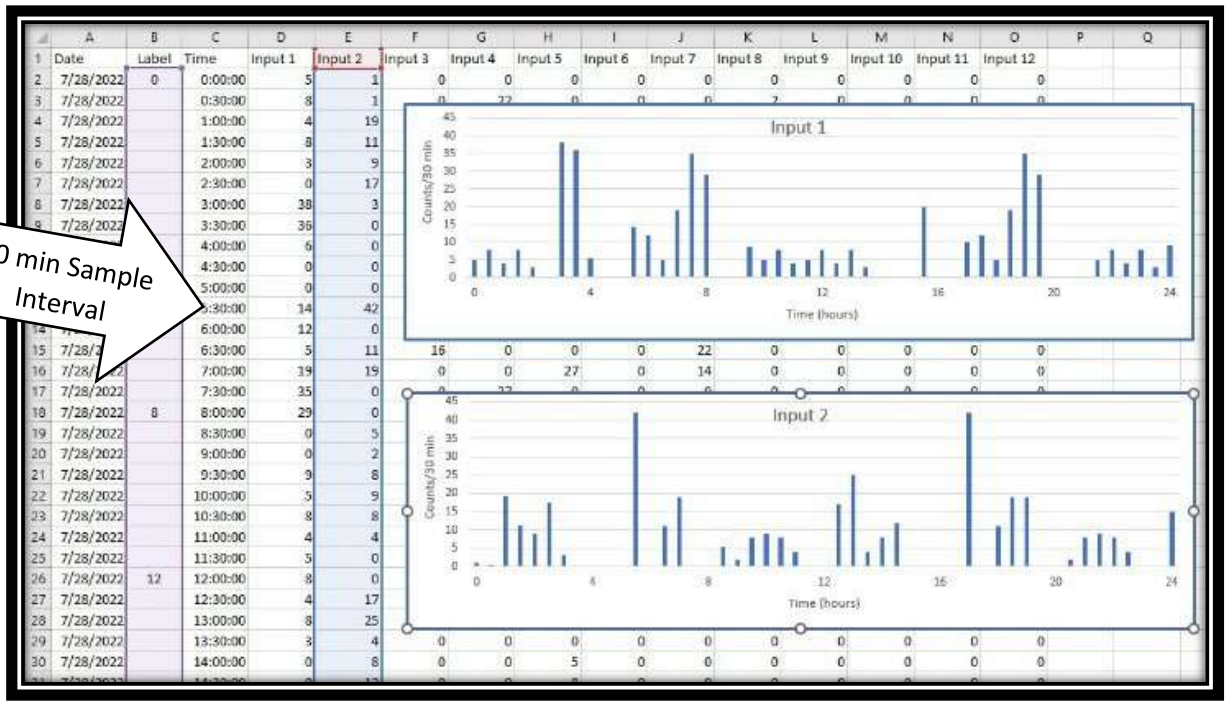


	A	B	C	D	E	F	G	H	I	J
1	Date	Time	Input 1	Input 2	Input 3	Input 4	Input 5	Input 6	Input 7	Input 8
2	7/18/2022	9:53:54	5	6	4	0	0	0	0	
3	7/18/2022	9:54:04	9	0	5	0	0	0	0	
4	7/18/2022	9:54:14	12	5	2	0	11	5	10	
5	7/18/2022	9:54:24	0	0	6	0	5	0	0	
6	7/18/2022	9:54:34	1	0	1	0	4	0	0	
7	7/18/2022	9:54:44	0	1	0	0	5	3	0	
8	7/18/2022	9:54:51	0	0	0	0	7	0	0	
9	Stopped									

E.g., 10 sec Sample Interval

Trigger events per Sample Interval

Example: Simple "actigram" created from Excel data. Data columns for "Input 2" graph are highlighted



Troubleshooting

- **LCD Display Distorted or not showing Start Up Screen or Date/Time**
  - Wait at least 15 seconds to allow the screen to refresh.
  - If the problem continues, unplug the power cord, wait a few seconds then reconnect power.
- **Incorrect date/time in data files**
  - The date and time are not set in the system. Please refer to System Settings section of this document.
- **Incorrect date/time in data files and system clock is set correctly.**
  - The battery back-up is not working. With a flat-head screwdriver or coin, remove the black battery cover and replace the AA batteries. Restart system and reconfigure system time/date.
- **The red Act/Err LED indicator is continuously on/lit.**
  - When the S012 is not collecting data: Unplug all inputs. If the LED stays on after all inputs are disconnected contact Starr Life Sciences. Otherwise plug each input back into the S012 one at a time. If LED turns back on after a sensor is connected, check the sensor function by checking alignment and then manually triggering the sensor. If LED remains lit regardless of trigger state the sensor is defective. Contact Starr Life Sciences.
  - When S012 is collecting data: The Act/Err LED should not be illuminated while data collection is active. Cycle the power off and on by unplugging the S012 for at least 5 seconds. If the problem continues after power is restored, please contact Starr Life Sciences.
- **The bottom "Fn" LED indicator on the front panel is not functional.**
  - This LED indicator is reserved for future applications.
- **Whole channels of data are not recording.**
  - Make sure that the cables and connectors are properly seated.
  - Refer to the section "Hardware Setup" to make sure that your sensors are triggering when expected.
- **The Real-Time Clock (RTC) does not maintain date and time with power off.**
  - Check the batteries and replace if necessary.
  - Remove the battery cover using a flat-head screwdriver or coin.
  - If using a volt meter to check batteries, replace each battery when it's measured voltage is 1.35 V or below.
  - Replace Battery Cover.
  - Reconfigure the system date and time by following the steps in the System Settings section of this document.

Spécifications

Dimensions: 6.3” x 6.5” x 2.05” (160 x 165 x 52)
Weight: 2 lbs (0.9 kg)
Enclosure Material: Aluminum
Input Power: 5 VDC, 4 A
Backup Batteries: 2 x AA (alkaline)

Input Jacks: 2.5mm Mono Jack x 12
Input Types:
- Any passive switch closure or “dry contact” input
- TTL level logic input with correct polarity

Polarity
- Center Pin – Signal
- Outside Ring – 0 VDC🡻

Voltage range	-0.6V to 5.6V
Input clamp current	±20ma
Input Low Max.	1V
Input High Min.	4V
Input leakage current	±1µA

Warranty & Disclaimer

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