

# Continuous Positive Airway Pressure Kit for Quick Prototyping CPAP Demonstration Kit

## Kit Highlights



- Powered by Renesas Synergy™ Platform – Synergy S7 inside
- High Speed CPAP Motor Control in fast acceleration and deceleration
- Easy Communication setup/data transfer via GPRS/3G
- Secure Cloud Access to HTTPS(TLS) access (HIPAA compliance)
- Secure Data Storage via SDHI  
LCDC embedded with 2D engine and JPEG codec

As part of Renesas' expanding healthcare solutions offering, we developed the Continuous Positive Airway Pressure (CPAP) Kit as a proof of concept – one that will enable customers to reduce their time to market.

CPAP is a non-invasive therapy for treatment of Sleep Apnea condition, deliver constant airflow to people while they sleep. CPAP is often referred to as “the gold standard” treatment option and is the most commonly prescribed.

Renesas CPAP Demonstration Kit demonstrated the ease of implementation using Renesas Synergy™ S7 device with Synergy Software Package (SSP). The kit contains four fully functional modules: High Speed CPAP Motor Control, Secure Data Storage, Graphical Control Display and Secure Connectivity to cloud.

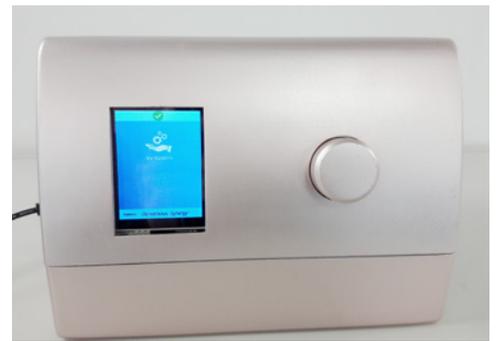
### Renesas CPAP Demonstration Kit Functional Modules

CPAP Motor	Cloud Connectivity	Data Storage	HMI
 <ul style="list-style-type: none"> <li>• Sensorless Vector Control</li> <li>• &lt; 16% CPU resources usage while running at 33KRPM</li> <li>• High speed acceleration and deceleration; From 5000RPM to 33KRPM in 0.15µs</li> </ul>	 <ul style="list-style-type: none"> <li>• Cloud Connectivity via GPRS/3G Network</li> <li>• AES encryption</li> <li>• Secure Cloud access</li> <li>• Demonstrate HTTPS (TLS) access (HIPAA compliance)</li> <li>• Highly Secure Key Storage</li> </ul>	 <ul style="list-style-type: none"> <li>• SD Card Storage</li> <li>• File System (FAT)</li> <li>• AES encryption</li> <li>• No Ext SDHI Controller required</li> </ul>	 <ul style="list-style-type: none"> <li>• Eliminating Ext Graphic LCD Controller with 2D Graphic Engine and JPEG decoder build-in.</li> <li>• GUIX make graphic design make easy</li> <li>• High capacity build-in SRAM (640KB) eliminate Ext SRAM</li> </ul>

The CPAP motor control functional module demonstrate the controlling of the airway pressure. The motor can accelerate and decelerate to high speed from 5000rpm to 33000rpm in just 0.15µs, utilizing only less than 16% CPU resources.

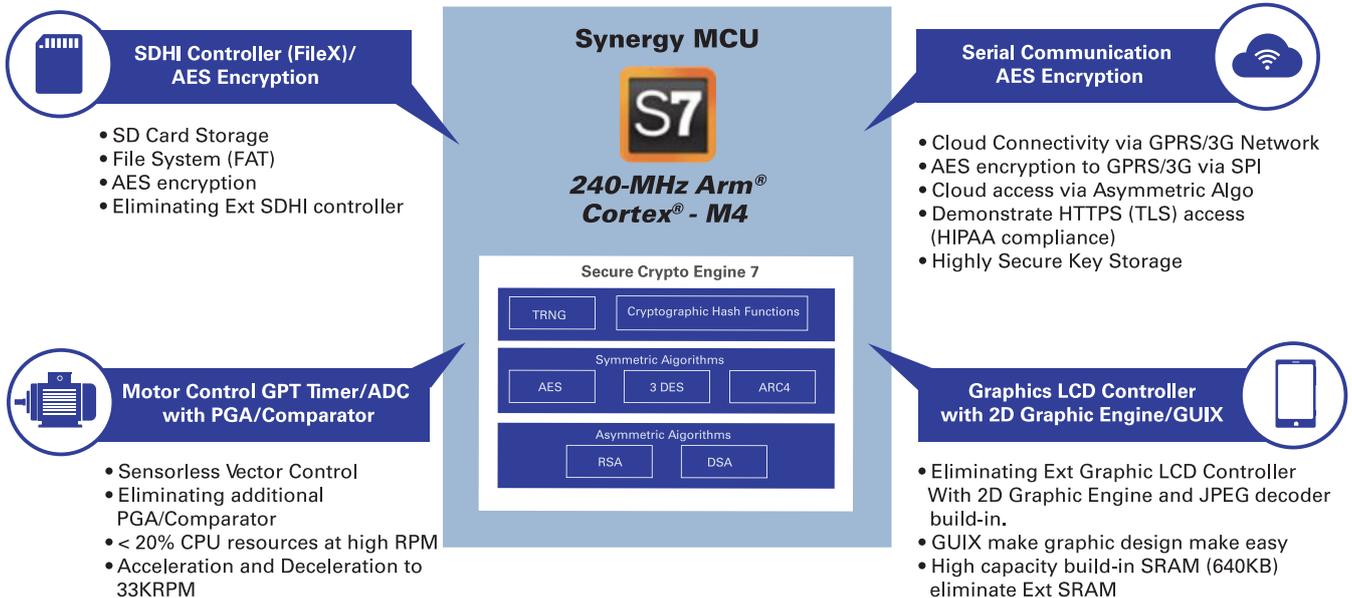
The Synergy S7 has a build-in LCD Controller that allow easy implementation of HMI using GUIX S/W. The MCU also come with a 2D graphic Engine and JPEC decoder with high capacity SRAM (640KB) that allow changing of graphic design and resolution easily without external memory.

The Cloud connectivity functional module demonstrate cloud access via GPRS/3G module. HTTPS access is also being demonstrated using advance security encryption engine and TLS. Data is a being securely encrypted and store in the SD storage. These are make possible within days of implementation using Renesas Synergy™ platform.



## Features

- High speed CPAP Motor Control - 33KRPM
- 3G/GPRS connectivity
- HTTPS access (TLS) (HIPAA compliance)
- Secure data storage
- Graphical Display (QVGA TFT)



For more details on the CPAP Demo Kit, visit:  
<https://www.renesas.com/en-us/solutions/home/healthcare/hckit.html>

Visit our Healthcare Solutions page at:  
<https://www.renesas.com/en-us/solutions/home/healthcare.html>

For more information on Renesas Synergy, visit:  
<https://www.renesas.com/en-us/products/synergy/features.html>

