

# APPLICATION NOTE

## Using proconX ESENET with Woodward controllers

### Introduction

The gateway proconX ESENET allows SCADA systems, PLC's and visualization panels to communicate over Ethernet with one or more Woodward controllers. This application note describes several use cases.

### About proconX ESENET

The ESENET (Woodward P/N #8445-1044), designed and manufactured by proconX Pty. Ltd. is an Ethernet gateway specifically designed to interface Woodward's genset controllers and ATS controllers with Modbus/TCP networks. The gateway features a CAN and an Ethernet port and can be mounted on a DIN rail. On the CAN side it implements the CANOpen protocol to connect to the Woodward controls. On Ethernet it implements a Modbus server (Modbus/TCP) and accepts connections from Modbus master devices like PLCs or SCADA systems. Please see product documentation from proconX (manual - UMSENET-1101, Set-up application note – AN309-1102, datasheet – DSESENET-1102) for more details.

### Benefits using proconX ESENET with Woodward controllers

The ESENET can be used with easYgen3000, easYgen2000, easYgen1000, DTSC-200 and LS5. One ESENET can communicate with up to 16 WW units connected on CAN bus. The ESENET does not only translate Modbus TCP transactions into CANopen orders but also collects data of the WW devices in its own memory. This provides a fast refresh of visualization data in comparison to a serial Modbus connection. ESENET can be used in several applications.

- easYgens can be visualized, configured and controlled from a remote display panel or PLC
- easYgens alongwith LS5s can be visualized, configured and controlled from a display panel or PLC
- A PLC or SCADA system shall visualize data of easYgens and LS5s. The easYgens shall accept commands and set points. The PLC or SCADA system shall be able to reconfigure parameters.

Additionally, ESENET supports the connection of the Woodward own PC tool "Toolkit" to Woodward devices over Ethernet. This feature allows to

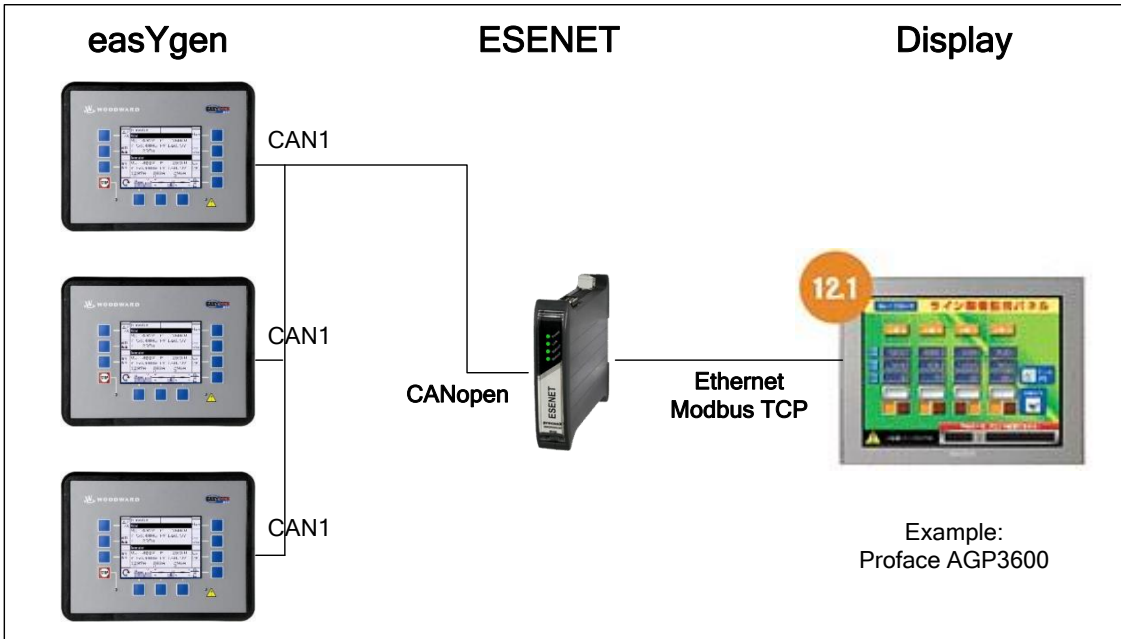
- Connect multiple easYgens of the same type with toolkit
- Connect multiple LS5s of the same type with toolkit
- Establish remote control over Ethernet instruments controlled by Toolkit
  - Alarm status display
  - Counter status display
  - Reconfiguration of functions
  - Remote control Start/Stop/Acknowledge.

### Application Examples

#### 1. Visualization and/or control of easYgen from a display panel or PLC

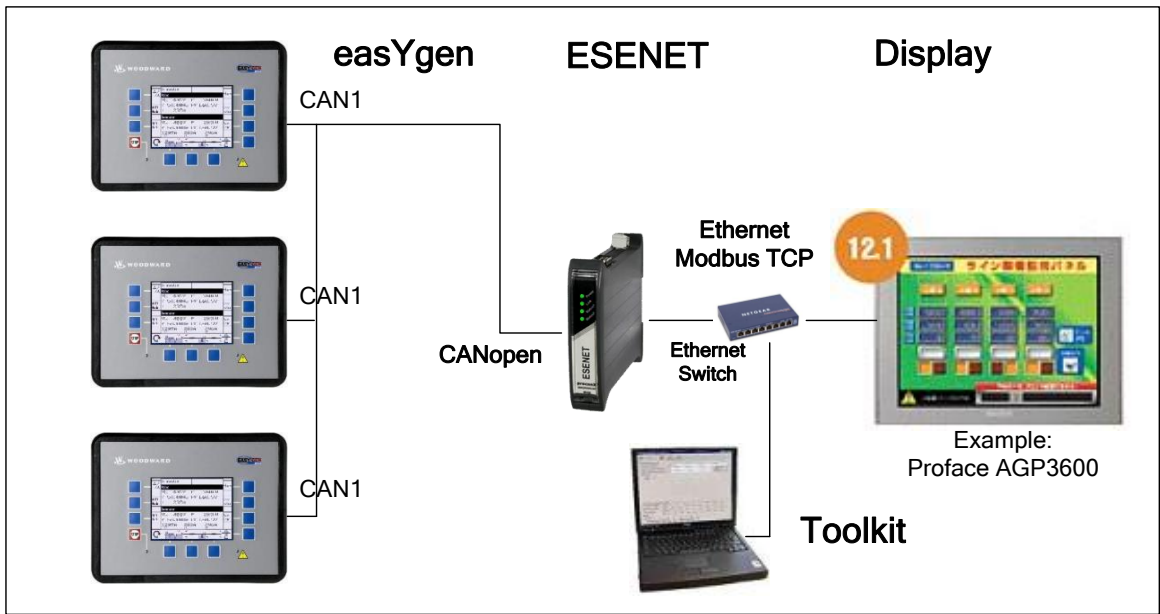
The ESENET receives Modbus TCP orders by the display panel for reading out easYgen data. The display panel must be able to run Modbus TCP as master. Up to 16 easYgens can be connected in a network. The programmer of the display panel uses the Modbus addresses like it is described in the easYgen manual. In

comparison to a direct serial coupled display application, the refresh rate of the single values is faster via ESENET.



**System of easYgen3200 with freely configurable Display Panel**

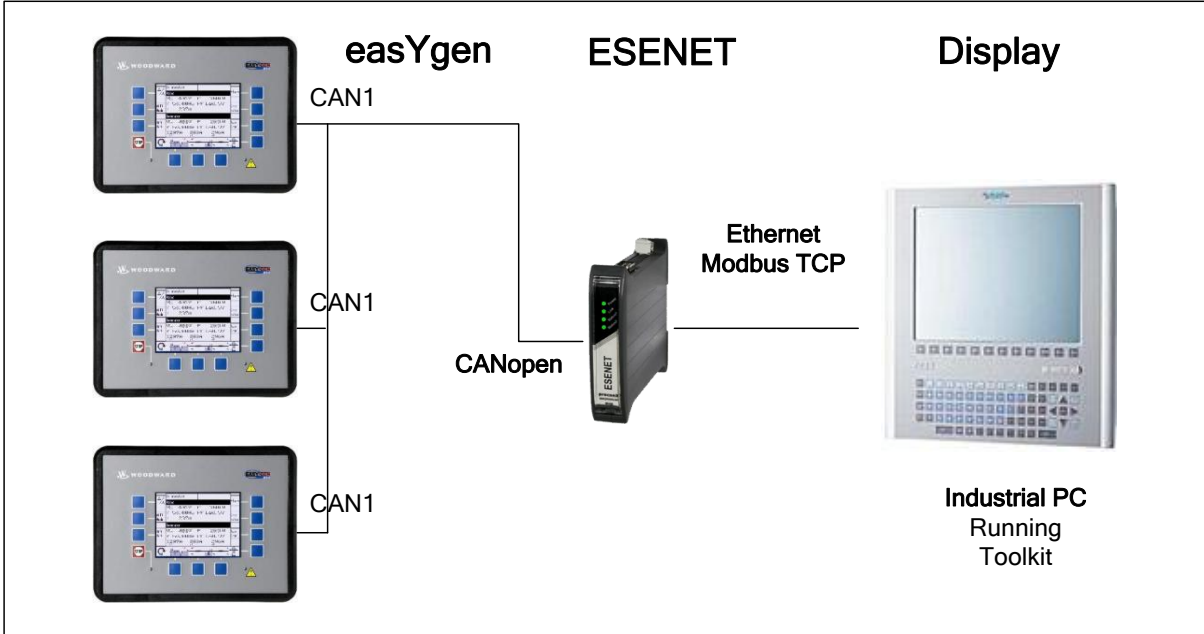
The display programming is done by the customer. As long as the display software allows it, the display can visualize all relevant data of the easYgen(s). The concept includes also the capability sending remote control orders from the display panel to the single easYgen. Woodward provides demo templates for Proface Display AGP3600



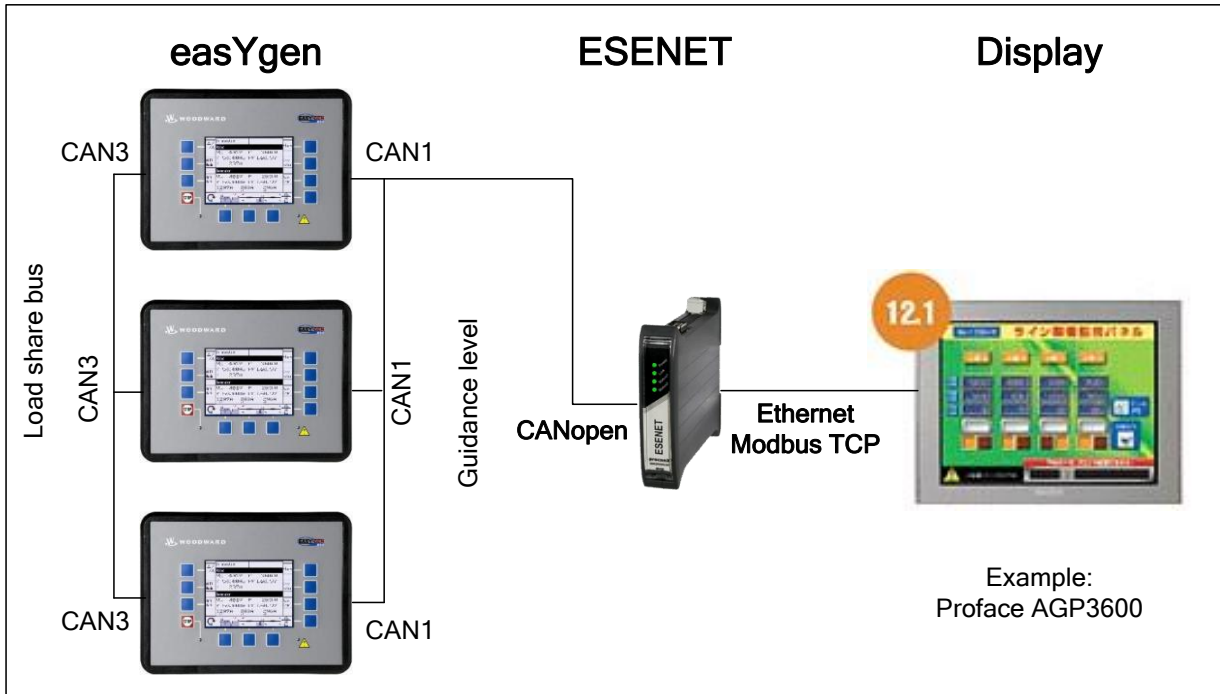
**System of easYgen3200 with Display Panel and PC service tool Toolkit**

The PC software Toolkit can be equipped with a driver to handle the ESENET gateway. It means that the Toolkit orders are translated to the Modbus TCP orders, which finally result in CANopen commands. This procedure permits to run a display panel simultaneously to Toolkit.

**Note:** proconX offers a driver for Toolkit talking to ESENET via Ethernet. The dll of the existing USB Kvaser driver is used. After installing the driver, the operator can connect the ESENET through the USB Kvaser call. Woodward plans to bring the ESENET driver as well into the connection dialog.



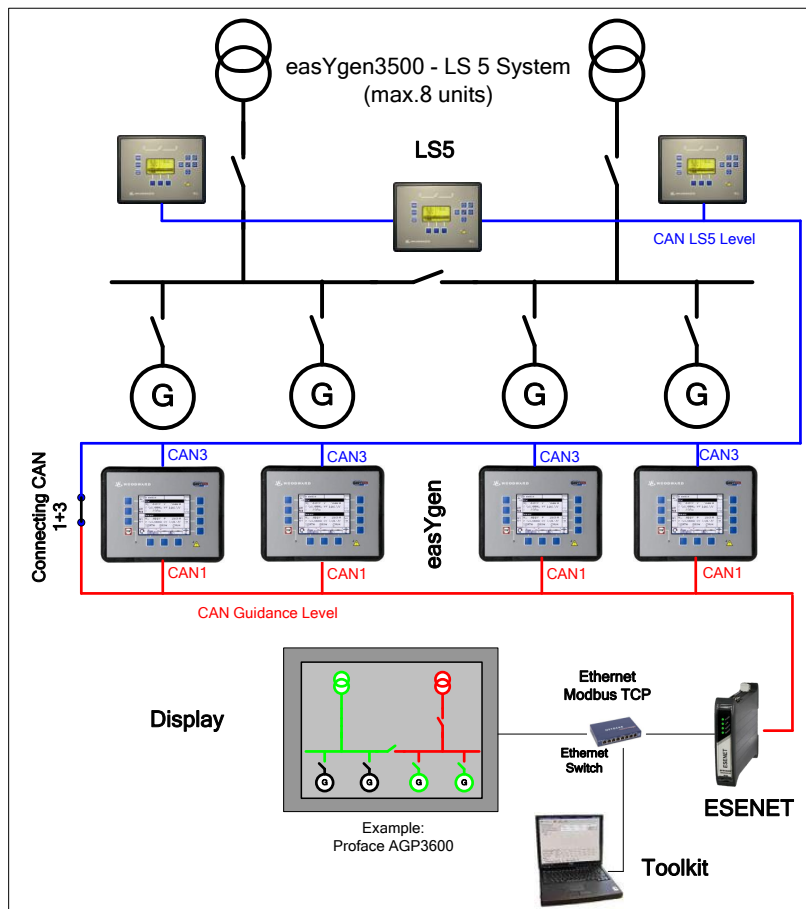
**System of easYgen3200 with industrial PC running Toolkit**



**With easYgen3500**

The easYgen3500 provides an especially CAN3 port for load share and L5 purposes. The CAN1 bus remains the CAN connection for the ESENET.





**An easYgen3500 / LS5 system and PC service tool Toolkit (max. 8 members on CAN bus)**

**Note:** Running the Service tool Toolkit on the CANbus with different CANopen members requires especially adjustments in the \*.wtool-file. In the example above toolkit could be started with the wtool-file for LS5 or easYgen3500. During the first connection to the CANbus toolkit will ask for a \*.sid-file, which is unknown. With allocating one-time the correct \*.sid-files for all members toolkit will be right adjusted.

**Note:** Handling different Woodward units simultaneously can be accomplished by Toolkit, but the user has to design overview screens. This requires the design license version of Toolkit. Woodward will offer some design templates in future to ease adaptation to single applications.

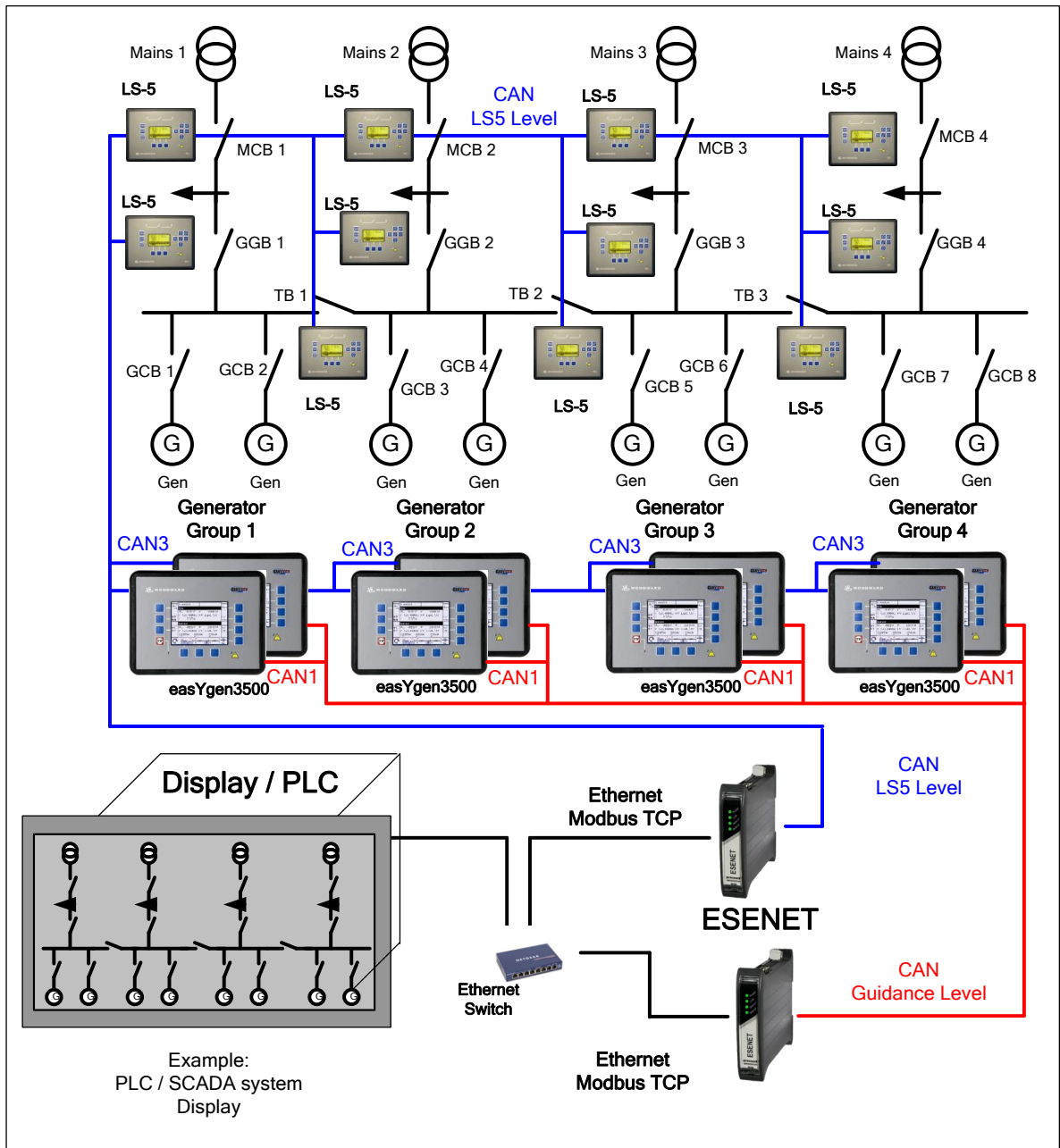
## 2.2. Display Panel or PLC shall visualize and/or control a system of easYgens and LS5 (More than 8 members on CAN)

Usually the CAN3 bus must operate separated from the CAN1 bus. If the number of members on the easYgen3500 / LS5 system exceeds eight, two ESENET units are required to visualize and/or control the system. This requires a Display Panel with two Ethernet Ports or the use of an Ethernet switch. ESENET gateway on CAN1 allows to:

- Visualize easYgen data and conditions
- Control easYgen (for example: Start/Stop engine, Open/Close breaker, Acknowledgement of alarms, ....)
- Configuration of the easYgen units

ESENET gateway on CAN3 allows to:

- Visualize LS5 data and conditions <sup>1</sup>
- Control LS5 (for example: Open/Close breaker, Acknowledgement of alarms, ...)
- Configuration of the LS5 units



**A complex easYgen3500 / LS5 system (More than 8 members on CAN3 bus)**

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<sup>1</sup> Notice: The ESENET causes additional data traffic on CAN3. For member number greater 8 a higher baudrate could be required, which has also an impact on the CAN distances.