Hevasure Aquila-2s Monitoring System

Technical Specification – V1.0

1. Introduction

Hevasure Monitoring technology enables continuous measurements to be made on important aspects of a heating or chilled water system as well as transmission of that data to a Building Management System (BMS) via a BACnet interface. Alarms with intelligent messaging are issued if parameters exceed critical levels, helping to ensure both engineering integrity and water quality are maintained, significantly reducing the risk of corrosion and preserving HVAC system efficiency. The Aquila-2s model has been specifically developed for secure environments such that external transmission of data via the internet is avoided.

The complete monitoring system comprises: hardware (sensors, data acquisition system with touch screen display, manifold, enclosure and fittings) as well as software. The primary hardware is contained within a metal, glass-fronted enclosure which can be wall mounted or free standing and is usually installed in a plant room (Figure 1).

Figure 1: Hevasure Aquila-2s Monitoring Station

2. Hevasure Aquila-2s Monitoring Station (hardware)

i. Enclosure

The overall dimensions of the steel enclosure are shown in Figure 2.

**Hevasure Monitoring Station
Compact Enclosure Dimensions**

Front View

Side View

250

310

96

61

Data Acquisition Unit

Isolation Valve
3/4in BSP Parallel
Female

600

504

Data
Acquisition
Unit

Isolation Valve
3/4in BSP Parallel
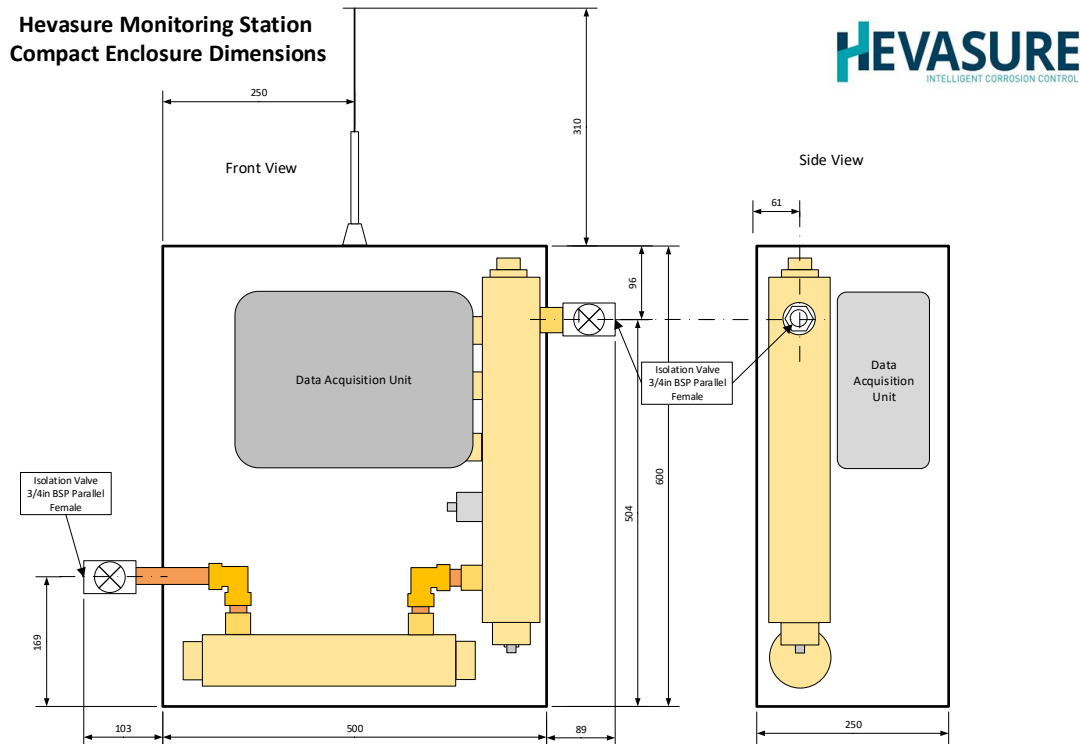Female

169

103

500

89

250

Figure 2. Monitoring Station Enclosure Dimensions

Steel cabinet: Schneider Electrical NSYS3D6525T.

Dimensions (mm):   H600 x W500 x D250

Supplied with lockable handle and wall mounting brackets as standard.

CAD drawing available from Schneider Electrical Web Site.

The enclosure is not IP rated it has been modified to allow improved access for routine maintenance operations.

Total weight: 25kg

ii. Materials

Cabinet:	mild steel (painted) with glass front
Manifold & galvanic current housing:	Polypropylene
Plumb fittings:	Brass and copper
Sensors:	various with EPDM rubber seals

iii. Operating Conditions

Max operating temperature (water):   82 C

Max hydraulic pressure: 10 bar

Note: for higher operating temperatures cooling fins can be used on the inlet side of the manifold

iv.   Plumbing connections

Connections to the LTHW or CHW system flow and return pipework is via 2 x ¾" BSP

v.   Electrical connections

Universal input (100-240Vac) mains supply, hard-wired. Note: A CE-approved 24V 3A DC power supply is contained within the data acquisition system.

vi.   Sensors (standard configuration)

> 1 x dissolved oxygen (Modbus output)
> 1 x conductivity (Modbus output)
> 1 x temperature (Modbus output from conductivity sensor)
> 1 x pressure sensor (4-20mA)
> 1 x galvanic current sensor (mA output)
> 1 x crevice corrosion sensor (resistance), containing elements for steel and copper corrosion detection
> Input for 1 x flow meter (pulse output)
> Optional: 1 x pH sensor (Modbus output)

3.   Data Acquisition System

The Hevasure Aquila-2s monitoring system comes with a state-of-the-art data acquisition system, containing a touch screen and numerous digital and analogue inputs, as well as a BACnet interface module. This will be delivered pre-configured for the system being monitored.

Sensor inputs: 4 x Modbus

> 2 x 4-20mA current sink (passive)
> 2 x 4-20mA current source
> 8 X Corrosion Resistance sensors (2-wire connection), isolated as a group.
> 1X Galvanic Current detect, Current from galvanic source detected across 5-ohm resistor. This is isolated
> 1X Flow (pulse) input

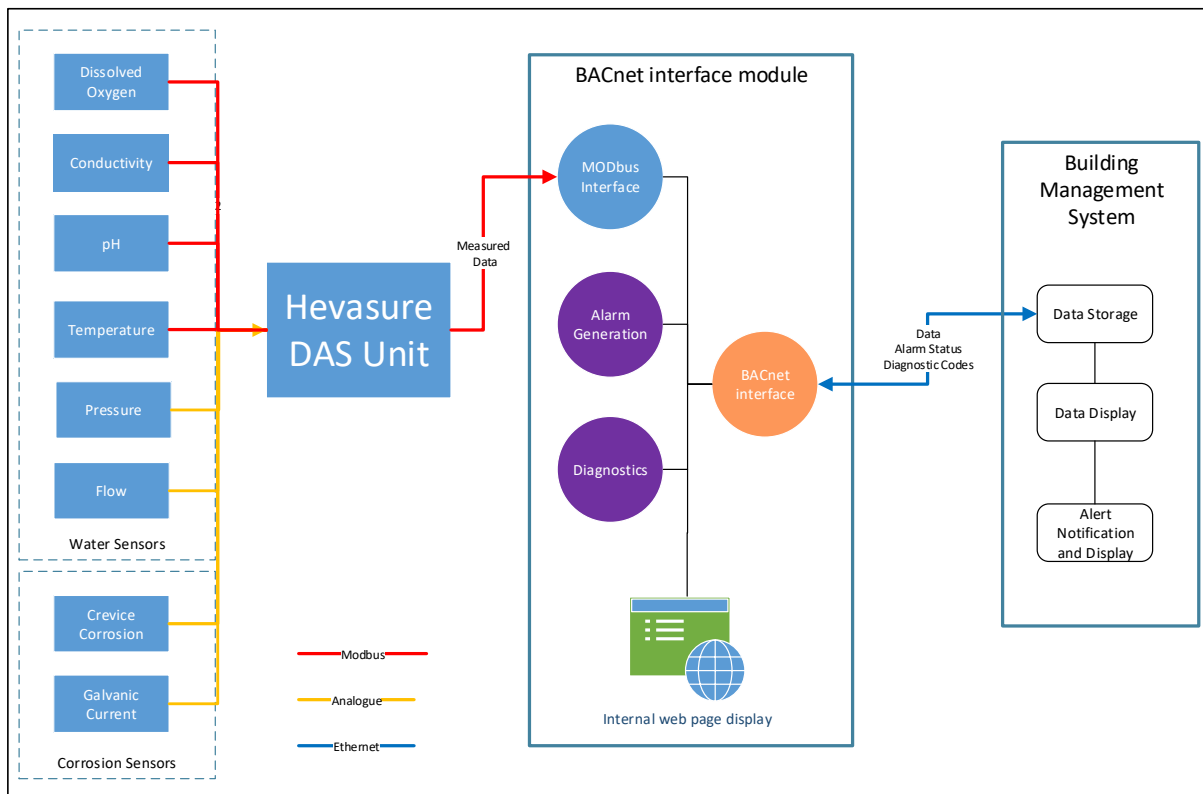A conceptual map of the data flow and interfaces is shown in Figure 3.

Figure 3: Hevasure Aquila-2s Monitoring Station

The measured data is processed via the DAS and BACnet interface module where it is analysed against pre-set limits. When these limits are exceeded, alarms are triggered and messages generated dependent on particular combinations.

The BACnet interface module is contained within the screen of the data acquisition system providing data processing and BACnet interface via a standard RJ45 ethernet port (on RHS of the external enclosure). The BACnet interface module converts all data, alarms and messages into BACnet protocol in order that they can be read by the BMS. No data is stored in the Hevasure system.

For further information refer to the Aquila-2 BACnet Interface Definition

4. Data Communication Modules and Connections

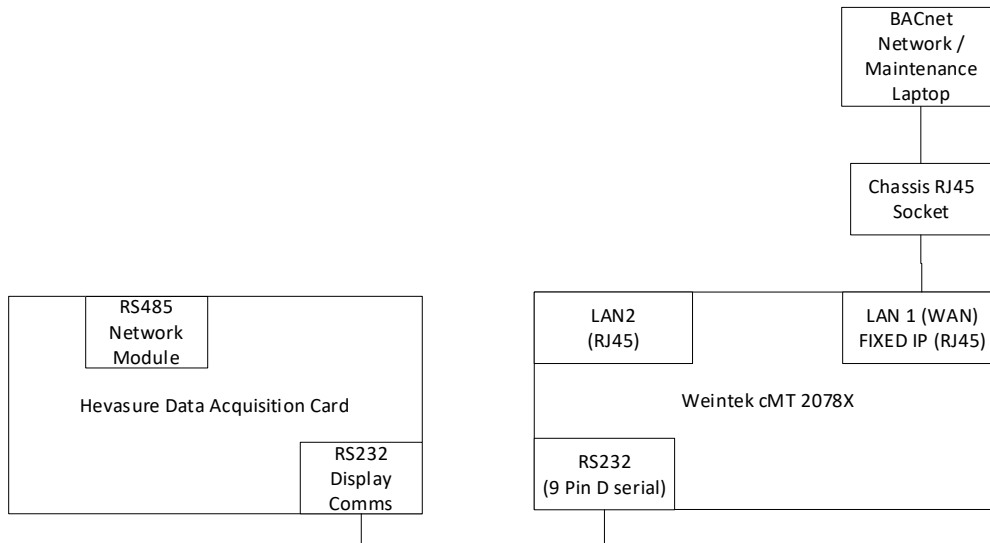The various components of the Aquila-2s monitoring system are shown in Figure 4.

Figure 4: Aquila-2s communication modules

5.　Installation

Installation should only be carried out by a suitably qualified engineer, trained in Health & Safety within a Plant Room environment. Site specific H&S rules apply.

Reference should be made to the document 'Installation of Hevasure Aquila-2 Monitoring Station.

Document Control

V1: Issued 26/10/2022　　　First release for Aquila-2s model