

SYNMET-NAV

Configurable and modular data logging and processing system - the high standard in ship meteorology.

Individual ship data are registered professionally in connection with the shipboard computer. Data are then processed for regulation and safety on board. Detection of turbulences, luff and lee comparison, "true wind" as well as "bottom track" shall be named as examples.

The sturdy and reliable data logger consisting of aluminium diecast housing with EMC cable glands has free configurable sensor inputs.

- 12 analogue sensor inputs for voltage, current, resistance
- 5 digital inputs: 3 x for frequency, impulse and status, 2 x for status only
- Integrated sensor supply

Applications

- Navy
- On ships, on the high seas
- Integration into navigational systems
- Project related application
- Maritime applications

Features SYNMET-NAV

Id-No. 00.95664.610000

- ▶ 1 year ring buffer
- ▶ 17 sensor channels and 43 virtual channels
- ▶ Able to communicate via Internet with a router *
- ▶ LAN integration via Ethernet-Interface *
- ▶ Integrated sensor and hardware control
- ▶ System configuration with USB stick
- ▶ Reading data with USB stick
- ▶ USB host
- ▶ USB client
- ▶ Optional Ethernet Connection Kit:
Simultaneous communication with up to 10 users
- ▶ 16 bit-sampling ADC for bipolar and unipolar measurements
- ▶ Resolution: 16 bit-ADC with 300...1024-fold over-sampling
- ▶ Proven installation concept

* Ethernet connection kit required

Microcontrollersystem and firmware

- 32 bit multiprocessor system with power-fail-detection and watchdog
- 64 MB-RAM
- 16 MB flash memory for operating system and application-memory
- 1 GB flash memory for measuring values
- Firmware for meteorological applications, for sensors and data acquisition
- Configuration of sensors and interface by SYNMET Commander
- Comfortable firmware update by means of USB stick
- Real time clock

Analogue and digital free configurable sensor inputs

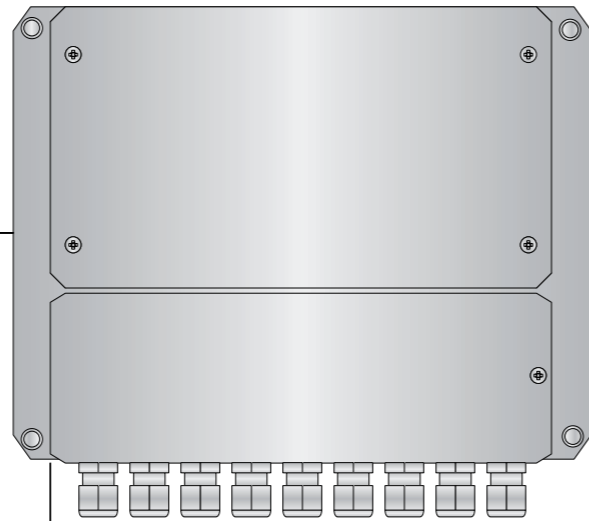
- 12 analogue sensor inputs for voltage, current, resistance
- 5 digital sensor inputs; 3x for frequency and status as well as 2x for status only
- Differential inputs with programmable amplification and low pass filter
- Sensor supply 12/24 VDC, short-circuit-save and galvanically separated
- Four-wire-circuit and constant current source 1mA / 10 mA for resistance measurement
- 16 bit-sampling ADC for bipolar and unipolar measurements
- Resolution: 16 bit-ADC with 300...1024-fold over-sampling
- 16 bit-counter for frequency, events and binary status
- Resistance measuring range: Pt100, 500, 5000 Ohm
- Voltage measuring range DC: ± 50 mV / ± 5.0 V and 5.0 V (unipolar)
- 3 digital inputs for frequency, events and binary status ($[\log_0] < 2$ V and $[\log_1] > 2.5$ V...30 V)
- Frequency input for up to 10 kHz
- 2 digital only status inputs
- Supports inductive proximity switch according to NAMUR
- Connections for several sensor types in meteorological and industrial applications
- Processing of up to 60 channels (17 sensor-channels and 43 serial/virtual channels with formulas)
- Automatic reference measurement of offset and amplification for temperature-drift-compensation
- Digital software filter for peak-detection and sensor signal quality control
- Detailed failure identification like over range, bad-signal and open-channel

Digital switching outputs

2 switching outputs for alarm or time control as open-collector, optional with relay

Operation and display elements

- LCD with 2 lines – 16 signs each
- Turn-push button
- Easy functional test
- Measured value display and error control of the sensors
- Reading of the measuring values on USB stick
- Download of the SYNMET-configuration from the USB-stick respectively storage on the USB stick
- Firmware update via USB-stick
- LED-service-field for power supply, internal tensions and sensor supply
- Operating switch for power supply
- 8 codable precision shunt resistance 100 Ohm for 0/4...20 mA



Serial interfaces

- 9-pin RS-232-C Sub-D-connector (COM1) for interconnection to PC, as diagnostic and configuration interface of SYNMET Commander
- COM1 as RS-232 or galvanically separated RS-422, COM2 as RS-232 (RS-422/485 optional)
- Simultaneous and independent operation for 2 serial devices like: PC, modem, serial sensors, digital indicators (Meteo-LCD)
- Data transmission RS-422 (up to 1000 m), telephone-, GSM- or radio-modem
- With optional RS-module (COM3...6)
Galvanically separated RS-422/485 interface
RS-485 network with several SYNMET-stations

USB host interface

- Read-out of measuring values and storage on USB-stick
- USB-stick as portable memory medium
- Load SYNMET configuration from USB stick or storage on USB stick
- Firmware update by means of USB stick

USB client interface
just for service use

Power supply

- Power supply: 85...264 VAC
- Power consumption of the CPU approx. 1.5 W
- 12/24 VDC sensor supply 3 watt
- Max. power consumption 30 watt (DAC-module, 10 watt-module (on sensor interface module))

Optional extension modules

Exchangeable ESD module

ESD module Id-No. 32.95661.009 000

- ESD- / overvoltage protection module for all analogue and digital sensor inputs according to Human-Body-Model for direct- / air-discharge and current-peaks
- Continuous data acquisition / logging as well after removing of ESD module in service case
- Direct discharge: 8 kV
- Air discharge: 15 kV
- Current pulse: ± 3 A / 20 μ sec; ± 2 A / 100 μ sec; ± 5 A / 4 μ sec

Optional sensor interface unit

Sensor interface unit, max. extension Id-No. 32.95660.107 090

- Voltage divider for 12 analogue inputs
- 2 DC/DC-converters 12/24 VDC for sensor excitation 3 VA
- 12 V DC/DC-converter / 10 W
- 2 relays with changeover contacts
- Interface driver RS-422 / RS-485 for COM2-Port
- Resistor array for sensor specific impedances (e.g. generator or voltage divider for 5...30 VDC)
- Switchable power supply for extern devices like sensors or modem
- Programmable alarm output, threshold monitor and time control of electric consumers
- Connection of serial sensors or additional PC / modem for distance up to 1000 m
(Further expansion stages on request.)

Optional Ethernet connection kit

SYNMET NAV Connection kit for Ethernet interface Id-No. 32.95660.036 000

- SYNMET Integration into Intranet (LAN) and Internet (additional router needed)
- Support of up to 10 simultaneous links to SYNMET Commander and MeteoWare CS
- Lead out of the Ethernet interface over a special M12-connection guaranteeing the tightness of the housing IP65 (plug connected)

Optional PSH unit

PSH unit Id-No. 32.95527.007 000

- Optional power supply 35 W · 24 V · 1.6 A
- Power supply with wide input range 90...260 VAC
- Connection for wind sensor heating

Optional extension modules: either DAC-module or RS-module

DAC-module Id-No. 32.95660.031 000

- High-precision analogue outputs with 16 bit resolution
- Programmable output current: 0/4...20 mA (burden max. 600 ohm)
- Output voltage: 0...10 VDC / 3 x 50 mA, 5 x 10 mA
- Configurable sensor allocation and scaling
- Easy adaptation to existing analogue systems
- Outputs, galvanically separated and short-circuit-proof

RS-module (COM3-COM6) Id-No. 32.95660.032 000

- 4 additional serial interfaces for 3x RS-422 / RS-232 and 1x RS-485 / RS-232
- Galvanically separated RS-422, RS-485 interface driver
- Connection of serial sensors or computers



Available configuration software SYNMET Commander

Id-No. 36.09335.000 001

- ▶ PC software for WINDOWS 7 / 8.1 / 10
- ▶ Call of stored measured values and storage as CSV file
- ▶ Visualisation of the CSV file
- ▶ Centralized station management and remote maintenance via modem and Internet
- ▶ Free definition of new analogue and digital sensors
- ▶ Configuration of the SYNMET:
 - Set measuring value cycle 1 Hz or 2 Hz
 - Interface parameters
 - Determination mean value times 1, 2, 3, 5, 6, 10, 15, 20, 30, 60 minutes
 - Optional global acquisition of the extreme values
 - Setting of the communication parameters of each interface:
 - Baud rate 150...115200 baud
 - Allocation of communication protocols to interfaces (NMEA, SNAP, serial pressure sensor)
 - Determining of IP address, Sub-Net-Mask, gateway address
 - Communication port
 - Allocation of sensor parameters to the individual channels
 - Definition of serial and virtual sensors
 - Selection of up to 2 wind sensor pairs for moving mean values
 - Definition of the switch outputs for process control, error control or measuring range control
 - If DAC module is available: allocation of channels to the analogue outputs and scaling of the outputs
 - Definition of the NMEA data output
 - Setting of date and time

General environmental conditions

- Temperature operation range: -30...+70 °C
- Relative air humidity operation range: 0...100 % r.h. (non-condensing)

Housing

- Aluminium diecast housing with 12 EMC VG cable glands, dimensions 306 x 241 x 136 (W x H x D), weight 8 kg
- Appropriate for mast-outside-installation over the whole temperature range
- Divided housing for the electronic modules and the installation room
- Terminal plugs for extension modules (DAC- and RS-modules)

Associated system components

- Several sensors incl. cable
- Mast system stationary and transportable
- Interface-converter and modem
- PC software for WINDOWS 2000/ XP/ Win7

Standards

- Construction and low voltage standard according to 72/23 EWG and VDE 100
- EMC directive according to EN 50082/81, interference immunity and interference emission
- ESD protection according to IEC 1000-4-2/1000-4-5 and MIL STD 3015.7



Quality System certified by DQS according to
DIN EN ISO 9001:2015 Reg. No. 003748 QM15

Subject to change without notice.

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