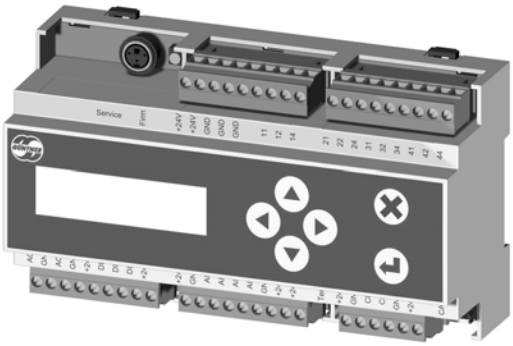
# Data sheet GRCpad.1
# Controller GHM pad



ERP no.: 5204930

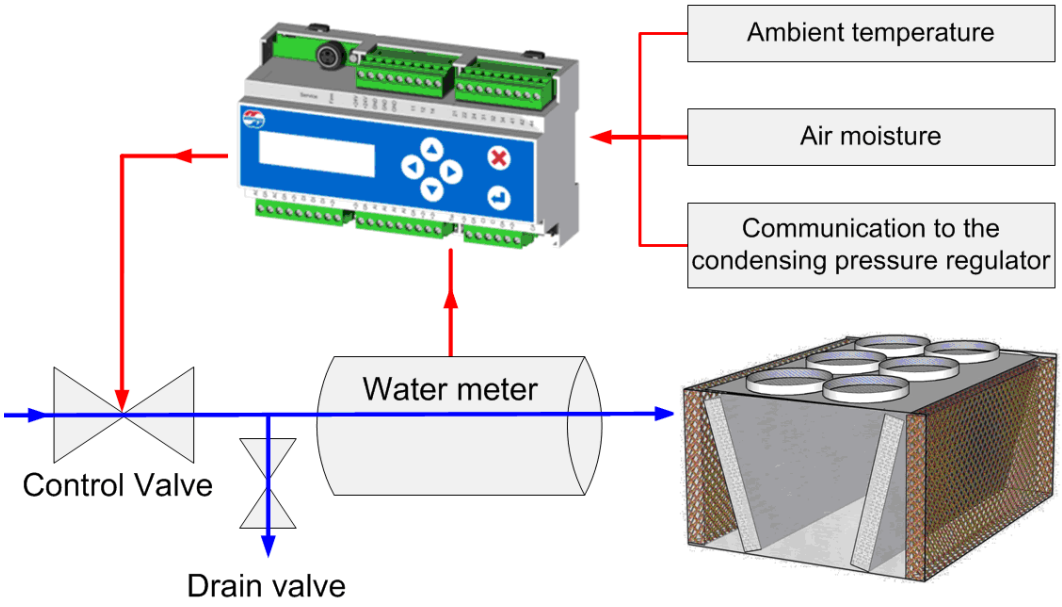
www.guentner.de

# Contents

# 1 GRCpad.1

## 1.1 Functional description

The wetting system is used for increasing the capacity of heat exchangers at peak load times with high external temperatures and for more efficient heat dissipation with moderate ambient temperatures. The adiabatic evaporation of the water on the hydropads cools the air sucked in by the heat exchanger, which increases the heat exchanger's capacity.
The wetting controller GHM pad governs the regulation of the wetting process. The required water volume is calculated on the basis of the load state, the ambient temperature and the humidity. The GHM pad sets the appropriate water volume using the control valve. The system's frost protection is secured with automatic draining. The water supply to the unit must be protected separately against frost.




Short description of the wetting controller GHM pad

In order to operate the controller it must have a power supply and must be enabled via digital input DI1. If this is not enabled the process will not be regulated.

The digital inputs are designed as potential-free contacts that must be connected to +24V.

**ADVICE**

Please note that connecting the wrong voltage (e.g. 230V) may seriously damage the controller.

An analogue output is used to control a steady regulating valve that governs the amount of water on the wetting mats.
Relay outputs are used to control solenoid valves and activate system messages and alarms.
The CAN interface of the GRCpad.1 is an internal interface for communicating with other Güntner units.
Communications modules are available for the external bus connection Modbus (GCM MOD GHMpad Rail.1, ERP no. 5206139).

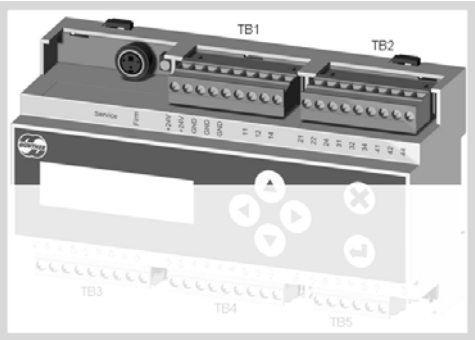
## 1.2 Configuration table

GRCpad.1

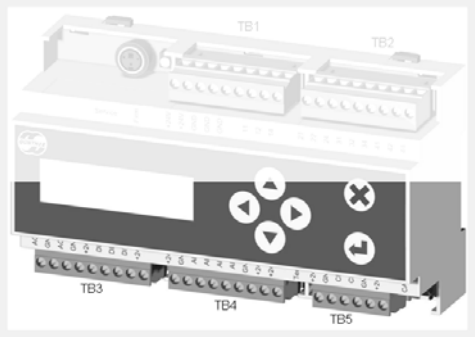
| | I/O | Signal | Position |
|---|---|---|---|
| **GRCpad.1** | DI1 | 24V | Enable |
| | DI2 | 24V | Differential pressure switch or external drain signal |
| | DI3 | 24V | Pulse input from water flow meter |
| | AI1 | 4..20mA | Temperature sensor 4..20 mA (-35...+75°C) ** |
| | AI2 | 4..20mA/KTY | Humidity sensor 4..20 mA (0...100% rel.hum.) |
| | AI3 | KTY | No function |
| | AI4 | 0..10V | Fan setting 0..100% |
| | AO1 | 0..10V | Control valve |
| | AO2 | 0..10V | No function |
| | DO1 | Relay | Fault |
| | DO2 | Relay | Warning |
| | DO3 | Relay | System message Wetting is active |
| | DO4 | Relay | Draining valve |
| **CAN BUS** | | | No function |

** The measuring range of the temperature sensor must be set up accordingly. You will find the necessary information in the corresponding data sheet.
If you use the combined temperature and humidity sensor AFTF-I (ERP 5204798) you will need to set DIP switches DIP 1 and DIP 2 to ON.

## 1.3 Connections




| Upper row of connections | | | |
|---|---|---|---|
| | **Name** | **Description** | |
| | Service | Service plug only for use by service personnel | |
| | Firm | Pushbutton only for use by service personnel | |
| **TB1** | +24V | External feed for power supply | |
| | +24V | | |
| | GND | Contact ground for external power feed | |
| | GND | | |
| | GND | | |
| | | Terminal not connected | |
| | 11 |  | relay DO1 |
| | 12 | | |
| | 14 | | |
| **TB2** | 21 |  | relay DO2 |
| | 22 | | |
| | 24 | | |
| | 31 |  | relay DO3 |
| | 32 | | |
| | 34 | | |
| | 41 |  | relay DO4 |
| | 42 | | |
| | 44 | | |




| Lower row of connections | | |
|---|---|---|
| | **Name** | **Description** |
| **TB3** | AO1 | Analogue output 1, 0-10V |
| | GND | Ground |
| | AO2 | Analogue output 2, 0-10V |
| | GND | Ground |
| | +24V | Voltage +24V |
| | DI1 | Digital input +24V |
| | DI2 | Digital input +24V |
| | DI3 | Digital input +24V |
| | +24V | Voltage +24V |
| **TB4** | +24V | Voltage +24V |
| | GND | Ground |
| | AI1 | Analogue output 4-20mA |
| | AI2 | Analogue input 4-20mA or for temperature sensor GTF must be configured in the soft-ware |
| | AI3 | Analogue input for temperature sensor GTF |
| | AI4 | Analogue input 0-10V |
| | GND | Ground |
| | +24V | Voltage +24V |
| | +24V | |
| | Term | DIP switch for CAN bus termination (120Ω) / ON = termination activated |
| **TB5** | +24V | Voltage +24V |
| | GND | Ground |
| | CH | CAN high signal |
| | CL | CAN low signal |

| Lower row of connections | | |
|---|---|---|
| | GND | Ground |
| | +24V | Voltage +24V |
| | CAN | CAN bus plug including power supply |

*TB: Terminal block

## 1.4 Electrical properties of

| | Min | Type | Max | Unit |
|---|---|---|---|---|
| Voltage supply | 21 | 24 | 30 | V |
| Current consumption | | 80 | 250[1] | mA |
| | | | | |
| **Digital inputs** | | | | |
| High level | 15 | 24 | 30 | V |
| Low level | -3 | 0 | 5 | V |
| | | | | |
| **Relay outputs** | | | | |
| Voltage DC | | 24 | 30 | V |
| Voltage AC | | | 250 | V |
| Current resistive load 24V DC/250V AC | | | 1 | A |
| Current inductive load 24V DC/250V AC | | | 1 | A |
| Switch cycles, mechanical | $1*10^6$ | | | Switching cycles |
| Switch cycles, electrical | $1*10^5$ | | | Switching cycles |
| | | | | |
| **Voltage input** | | | | |
| Dielectric strength | -24 | | 30 | V |
| Measuring range | 0 | | 12 | V |
| Resolution | | | 10 | bit |
| Fault | | | 1 | %[2] |
| | | | | |
| Input resistor: | | 230 | | kΩ |
| | | | | |
| **Current input** | | | | |
| Dielectric strength | -24 | | 30 | V |
| Measuring range | 0 | | 21 | mA |
| Resolution | | | 10 | bit |
| Fault | | | 1 | %[2] |
| Input resistance (without protective circuit) | | 130 | | Ω |
| | | | | |
| **Voltage output** | | | | |

| | Min | Type | Max | Unit |
|---|---|---|---|---|
| Voltage range | 0 | | 10 | V |
| Load resistance | | >=100 | | kΩ |
| Resolution | | | 10 | bit |
| Fault | | | 2.5 | %[2] |
| Short protection | | Yes | | |
| Potential separation | | No | | |
| | | | | |
| **Temperature input** | | | | |
| Dielectric strength | -24 | | 30 | V |
| Measuring range | -30 | | 100 | °C |
| Resolution | | | 10 | bit |
| Precision | | | 3 | %[2] |
| | | | | |
| **CAN bus** | | | | |
| Dielectric strength | -24 | | 24 | V |
| Transmission rate | | 125 | | kbit/s |
| Galvanic separation | | No | | |

1. The maximum current consumption includes supplying two attached pressure transponders and one attached temperature sensor.

2. Of the appropriate range

## 1.5 Installation / Operating conditions

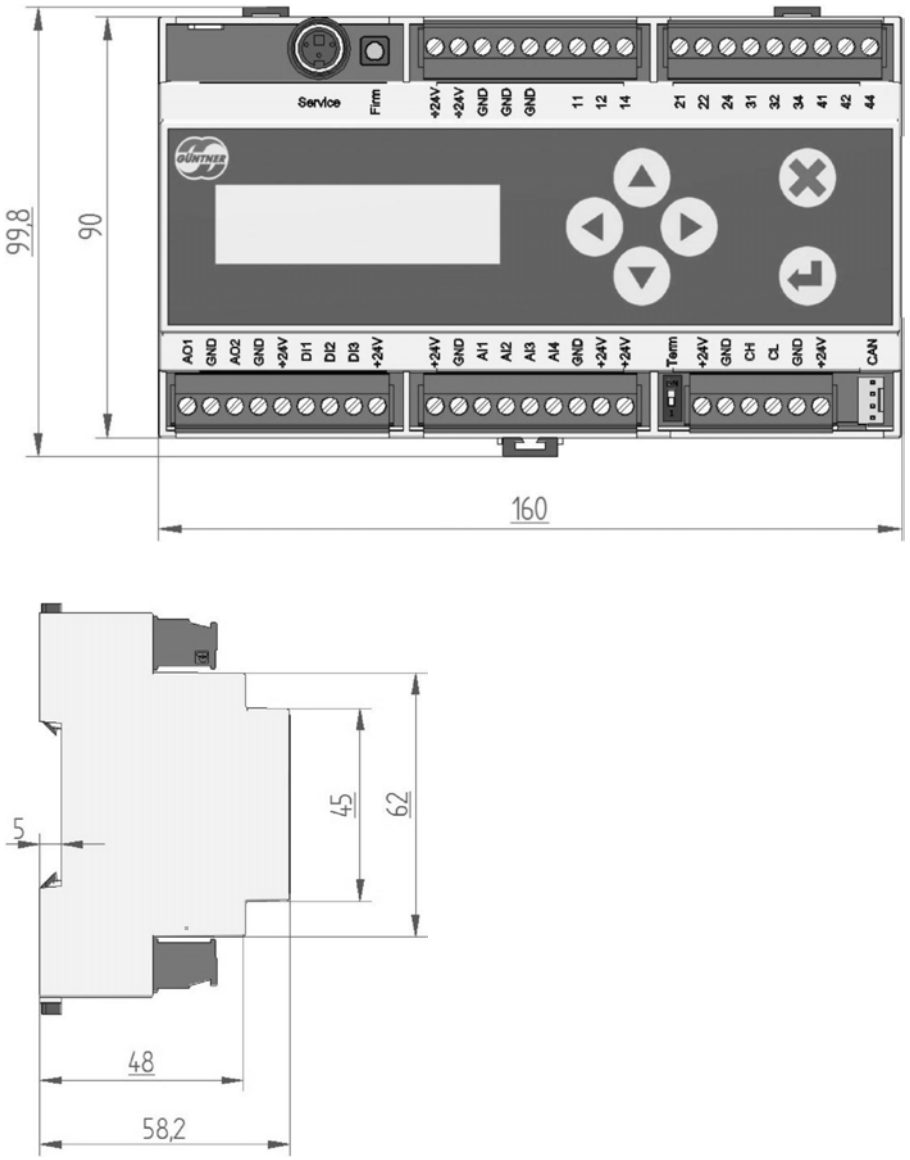
- The module is designed for mounting on a top-hat rail.
- All measurement and signalling lines must be connected via shielded cables.
- The shielding of measuring, signal and bus lines must be earthed at one end only.
- Suitable shielding and routing measures must be taken to ensure that mains cables and motor cables do not give rise to any interference in signal and control lines.
- Temperature:

| | |
|---|---|
| Storage Transport: | -20°C ... +70°C |
| Operation: | -20°C ... +65°C |

- Protection rating: IP 20
- Recommended cables: Belden 9841, Lapp 2170203, Lapp 2170803, Helukabel 81910

## 1.6 Dimensions / Weight

You will find the casing dimensions below. All dimensions are given in millimetres.




Casing dimensions of GRCpad.1

**Weight:**
ca. 340g