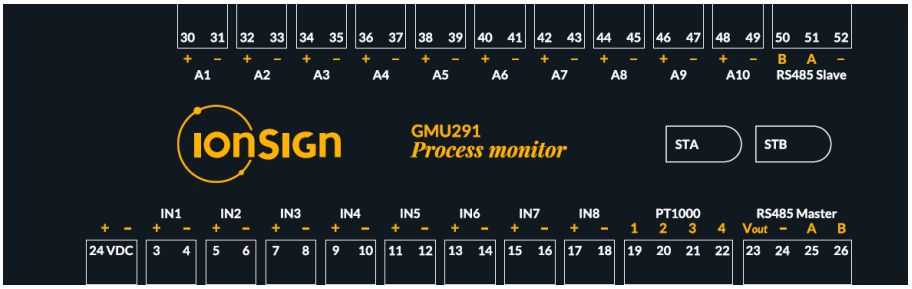
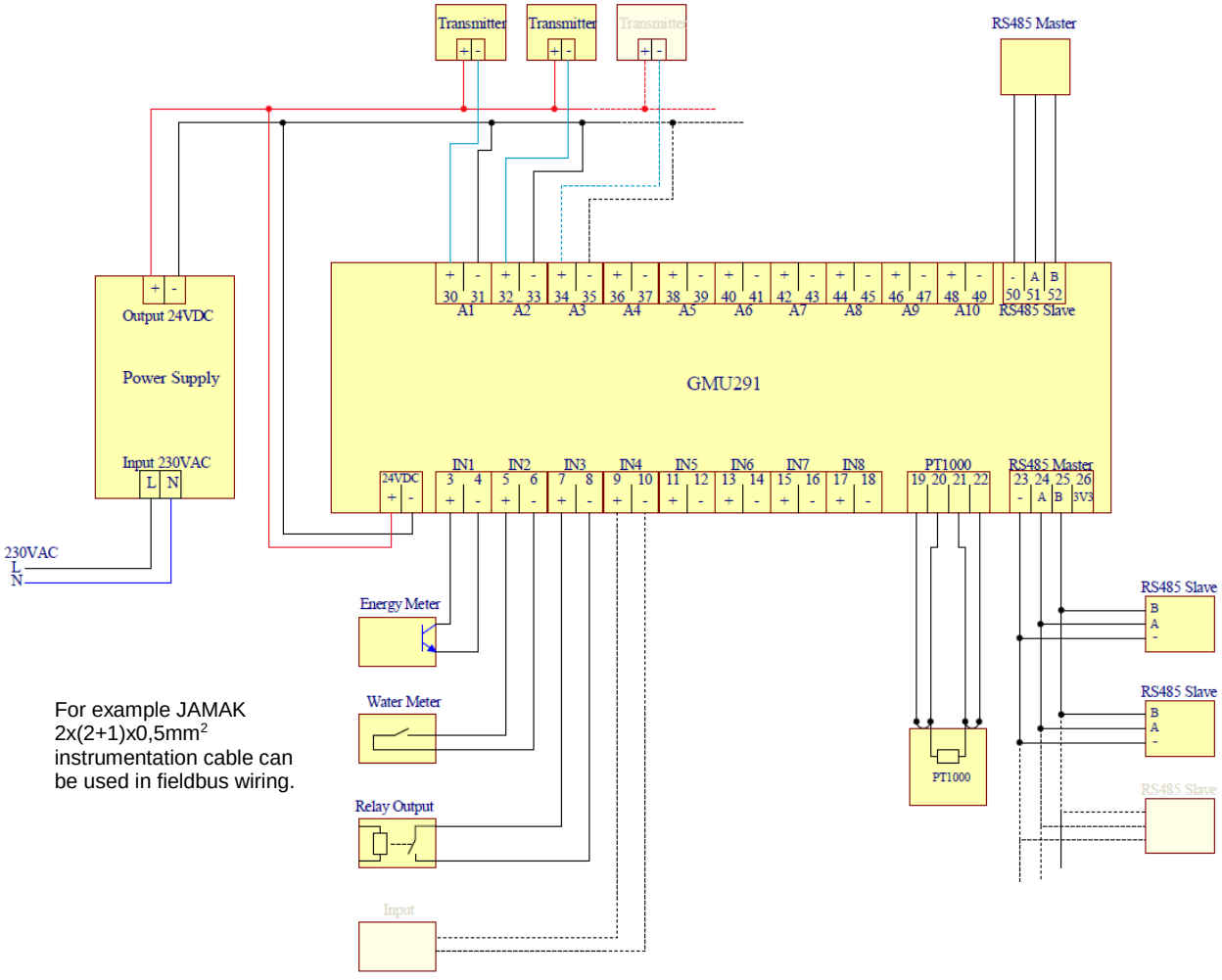
Commissioning of Gluon GMU291:

1. Connect the power supply.
2. Connect necessary metering devices, temperature sensor and Modbus devices.
3. When device is powered up STA led flashes once and then both leds flashes once simultaneously and finally STA led remains ON.
4. Do Modbus master reading settings via Modbus slave port.





Operating Instructions

GMU291 Process monitor

1 General

The GMU291 Process monitor is designed for collecting measuring data from device's own inputs and meters connected to it with Modbus field bus. Data can be read from Modbus slave port. After commission of the device, it collects data spontaneously without separate queries.

2 Indication lights

Device has two indication lights: STA ja STB.

STA is ON	Device is powered up.
STA blinks	Restoring of default settings is ongoing.
STB is ON	All Modbus devices are responding.
STB blinks	At least one Modbus device is not responding.
STB is OFF	Any of Modbus devices is not responding or Modbus master reading is not set.

3 Modbus slave

Values of measurements made by the device can be read from Modbus slave port registers. In addition some settings can be set to these registers. Device's default Modbus slave ID is 1 and there is separate operating insctruction for usage of device specific registers.

4 Modbus master reading

In addition to measurements from the device's own inputs, data collection can be supplemented by readings from meters connected to the device's Modbus master port. Collected data can be read from Modbus slave port registers. Modbus master reading settings are saved to Modbus slave port registers.

5 Failure recovery

The device has no built-in backup power, so data is not collected during power failures. When power supply resumes however, the device assumes all prior settings and starts collecting data without any need for user intervention.

6 GMU291 technical specifications

- 8 open collector or relay inputs for digital inputs or pulse counting.
- 10 current (4-20 mA) or voltage (2-10V) metering inputs.
- PT1000 temperature measurement input.
- 2 RS485 connections (Modbus master and slave).
- Operating voltage: 12…24 VDC.
- Power consumption: 100 mA.
- Real-time clock with battery backup
- Size: WxHxD 156 x 15 x 58 mm (9 module DIN enclosure).
- Protection class: IP20.
- Operational temperature range: -25°C...+50°C.
- Relative humidity: 5% - 95%, non-condensing.
- Data storage capacity: 13 000 data series (own measurements and 250 modbus registers). With 15 minutes update interval, memory buffer can hold 135 days of data series.

7 Takuu

ionSign grants a warranty of two (2) years for all delivered devices and software services. The warranty starts on the date of the delivery and it covers material and manufacturing defects. The warranty does not cover defects caused by improper use or installation nor does it cover defects caused by factors out of ionSign's control. These would be for instance grid malfunction or service changes of network operators services. ionSign delivers a new device to replace the defected one, without cost. Alternatively, ionSign may repair the defected device. The defected device must be returned to ionSign, if required, at ionSign's cost. The warranty does not cover dismantling, installation, and introduction costs and the like. ionSign warrants that the provided software essentially manage with their designed tasks, at the time of delivery. All significant software defects are covered by the warranty. The defects will be resolved without unnecessary delay. The resolution may be an instruction to circumvent the defect. If the delivery includes third party products or services, these are only covered by the applicable warranty provided by that third party. Title to the delivered goods transfers to the client, when the invoiced price is paid in full. All immaterial rights related to devices and services remain the property of ionSign. If the service was a design assignment, the client assumes the right to use and further develop the assignment results. ionSign is eligible to use the client's name as a reference in its marketing. ionSign is not eligible to disclose the order details without prior consent. In case of a force majeure, preventing to act according to the purchase agreement, the affected party will start immediate negotiations to assess the effects of the obstacle on the scope and schedule of the purchase agreement. ionSign appropriately backs up client's data residing on its servers. In spite of this, ionSign assumes no responsibility of possible damage due to loss of data. ionSign assumes no responsibility of direct or indirect damage to property or people, nor work or travel expenses, caused by using its services or devices, unless due to gross negligence. ionSign's financial liability is always limited to the value of the delivered goods and services, unless other-wise inflicted by the Finnish law.

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