

MUX-Box Manual

The sensor commutator



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1 Information about the MUX-Box

What is a **MUX-Box**?

The **MUX box** is the link between the sensors and the Weatronic receiver.
Information from up to 10 sensors can be properly modified and provided.

The **MUX box** of weatronic can handle many various sensors.

Sensors for the measurement of:

- number of revolutions
- flow measurement
- speed
- GPS position data
- voltage
- current
- temperature

can be used.

Recording / logging rate can be adjusted for each sensor individually.

In addition, "conditions" can be programmed in order to adjust up to 3 outputs.

2 Connection of the MUX-Box

2.1 Connector Pin Overview

- **USB** Is used for direct connection to a PC. You need a mini-USB cable.
- **Batt** This connector is for the power supply of the **MUX box**. With the 2nd Port the tag supply for other devices is provided. Therefore a V cable is not necessary.
- **SCU → RX** With a 1:1 patch cable a connection to the SCU Port of the receiver is established.
- **SCU ← Aux** Up to 4 additional **MUX boxes** or one LinkVario can be connected.
- **D1** Digital input: protected by optocoupler and connects ECU, switch etc.
- **A1 .. A5** 5 analog inputs: Depending on the programming sensors (such as temperature, revolution counter, consumption meter, ..) can be connected, as well as voltages are measured directly.
- **PT 1000** Connection for temperature measurement with **PT1000** and **Therm 1200**
- **Strom / Current** Port for power sensors
- **GPS** connector for **weatronic GPS-Modul**
- **Digital OUT** 3 x switching output - status of the 3 outputs is shown with 3 LED.

A detailed summary of possible sensors is described in Chapter 5.

2.2 How to connect to a weatronic receiver

For the operation of the **MUX box** two connections are required.

- A 3-wire cable is used for the data exchange.
Connect the "SCU port" of Weatronic receiver with the port "SCU → RX" of the **MUX box**.
- Another 3-wire cable is required for the power supply.
Connect any servo output of the Weatronic receiver with the "Batt" Connector of the **MUX box**. - Alternatively, you can also use a different power source.

2.3 How to connect to GigaControl

There are 2 options for programming

- „wireless“ Programming.

The **MUX box** is connected to the port on the SCU weatronic receiver. There have to be the normal transmission between the weatronic transmitter module and the weatronic receiver

(All Weatronic receivers are prepared for connection and thus capable of telemetry!

Furthermore a connection from PC via USB cable to the transmission module should be provided.

- „direct“ Programming.

A USB cable is plugged directly into the **MUX box**.

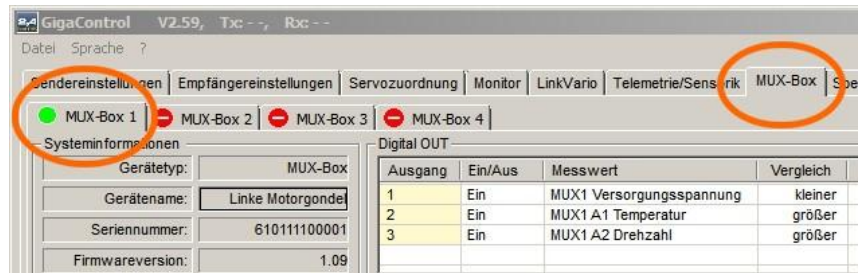
There is no difference whether programming is done "wireless" or "direct".

An established connection to the **MUX box** is displayed in GigaControl by a green dot.

With the "wireless" link, it may take a few seconds before the **MUX box** is recognized by GigaControl.

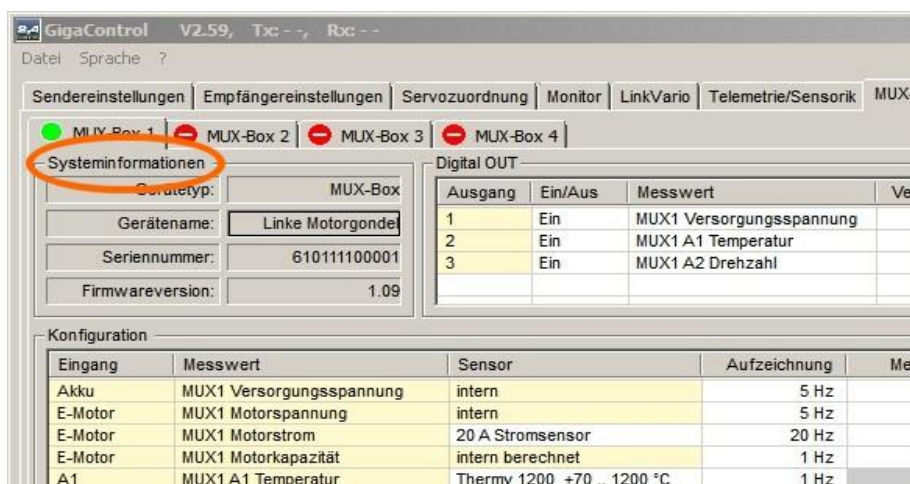
3 Programming of the MUX-Box

The MUX box is programmed with the software GigaControl.
A separate tab sheet MUX box provides the various settings.



3.1 System information

In the field 'System information' general information of the MUX box is displayed.



The device name can be entered as you like.

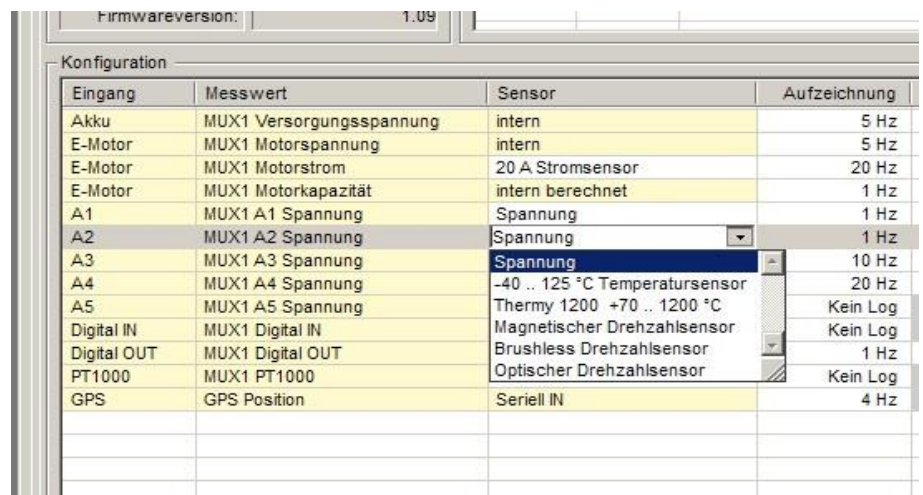
3.2 Configuration

In the field configuration ,the sensors can be assigned to the ports

In the picture above,

- Voltage
- Temperature Sensor -40 .. +125 °C
- Temperature Sensor +70 .. +1200°C
- magnetic RPM Sensor
- Brushless RPM Sensor
- Optical RPM Sensor

is displayed as a possible sensor setting for the sensor input A2.



To the port **A2** must be the same sensor connected, which is selected in the configuration!
The recording / Logginrate can be adjusted according to each sensor.

Konfiguration				
Eingang	Messwert	Sensor	Aufzeichnung	Messwert
Akku	MUX1 Versorgungsspannung	intern	5 Hz	0,2 V
E-Motor	MUX1 Motorspannung	intern	5 Hz	0,0 V
E-Motor	MUX1 Motorstrom	20 A Stromsensor	20 Hz	0,00 A
E-Motor	MUX1 Motorkapazität	intern berechnet	1 Hz	0 mAh
A1	MUX1 A1 Spannung	Spannung	1 Hz	0,000 V
A2	MUX1 A2 Temperatur	Thermly 1200 +70 .. 1200 °C	Kein Log	
A3	MUX1 A3 Spannung	Spannung	Kein Log	0,000 V
A4	MUX1 A4 Spannung	Spannung	1 Hz	0,000 V
A5	MUX1 A5 Spannung	Spannung	0,1 Hz	
Digital IN	MUX1 Digital IN	Optokoppler	Kein Log	
Digital OUT	MUX1 Digital OUT	intern berechnet	1 Hz	0 0 1
PT1000	MUX1 PT1000	PT1000	Kein Log	
GPS	GPS Position	Seriell IN	4 Hz	

Above, at the chosen Temperature Sensor, you can choose between following options

- None The measured value is displayed but not recorded on the MicroSD card.
- 1HZ The measured value is 1 time logged in each second.
- 0,1 Hz Every 10 seconds, the measured value is recorded.

In the very right column **Value** the current value is displayed.

In Chapter 4 you can see the List of all different types of sensors which can be connected to the respective input.
Likewise the recording rate and the range is specified.

3.3 Digital OUT

In the Digital OUT selection conditions for the outputs can be programmed.

Ausgang	Ein/Aus	Messwert	Vergleich	Wert
1	Ein	MUX1 Versorgungsspannung	kleiner	4,0 V
2	Ein	MUX1 A1 Temperatur	größer	50,0 °C
3	Ein	MUX1 A2 Drehzahl	größer	10000 1/Min

in the example above one condition for all 3 outputs is programmed.

Output 1: Die LED 1 / the Output 1 is active if the supply voltage is smaller then 4,0Volt.

Output 2: Die LED 2 / the Output 2 is active if the Temperature is bigger then 50,0 °C .

Output 3: Die LED 3 / the Output 3 is active if the RPM is bigger then 10.000 U/min .

Changing the values is possible by only clicking to the different fields.

3.4 Update

To be always "up to date", it is possible to update the Firmware.
More details can be seen in the Quick Start Guide Firmware Update Chapter 6.

4 Summary of the connection possibilities

Input	measurement range	Resolution	Logging	Sensor
Batt	3,8 .. 16Volt	0,004V	None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	Directly measured
A1 - Voltage	0 .. 20 Volt	0,001V	None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	Adapter cable
A1 - Temperature	-40 .. +125°C	< 1°C	None; 0,1Hz; 1Hz	SM-Modelltechnik
A1 - Temperature	+70 .. +1200°C	< 10°C	None; 0,1Hz; 1Hz	weatronic from 2Q. 2012
A1 – Speed	0 .. 250 / 0 .. 450 Km/h	< 1Km/h		SM-Modelltechnik
A2 - Voltage	0 .. 20 Volt	0,001V	None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	Adapter cable
A2 - Temperature	-40 .. +125°C	< 1°C	None; 0,1Hz; 1Hz	SM-Modelltechnik
A2 - Temperature	+70 .. +1200°C	< 5°C	None; 0,1Hz; 1Hz	weatronic from 2Q. 2012
A2 – RPM	> 100.000 U/Min	< 1U/s	None; 1Hz	SM-Modelltechnik
A3 - Voltage	0 .. 20 Volt	0,001V	None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	Adapter cable
A3 - Temperature	-40 .. +125°C	< 1°C	None; 0,1Hz; 1Hz	SM-Modelltechnik
A3 - Temperature	+70 .. +1200°C	< 5°C	None; 0,1Hz; 1Hz	weatronic from 2Q. 2012
A3 – Consumption	0 .. 3000ml/Min	< 1ml	None; 0,1Hz; 1Hz	weatronic from 3Q. 2012
A4 - Voltage	0 .. 20 Volt	0,001V	None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	Adapter cable
A4 - Temperature	-40 .. +125°C	< 1°C	None; 0,1Hz; 1Hz	SM-Modelltechnik
A4 - Temperature	+70 .. +1200°C	< 5°C	None; 0,1Hz; 1Hz	weatronic from 2Q. 2012
A5 - Voltage	0 .. 20 Volt	0,004V	None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	Adapter cable

A5 - Temperature	-40 .. +125°C	< 1°C	None; 0,1Hz; 1Hz	SM-Modelltechnik
A5 - Temperature	+70 .. +1200°C	< 5°C	None; 0,1Hz; 1Hz	weatronic from b 2Q. 2012
Battery + A3 + A4 (3s Lipo)		< 0,02V/Zelle	None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	weatronic from 2Q. 2012
PT 1000	-50 .. +850°C	< 1°C	None; 0,1Hz; 1Hz	weatronic 2Q. 2012
PT 1000	+70 .. +1200°C	< 5°C	None; 0,1Hz; 1Hz	weatronic from 2Q. 2012
D1	3,3 .. 16Volt	bis 1000Hz	None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	weatronic
GPS	NMEA 0183		None; 1Hz; 4Hz	weatronic GPS-Modul
Current	20A, 40A, 80A, 150A, 400A	< 0,01A	None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	SM-Modelltechnik
Digital OUT	3 x 2A		None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	
Digital OUT with Switch 4	3 x 10A		None; 1Hz; 2Hz; 4Hz; 5Hz; 10Hz; 20Hz	

5 Status LED / Blink codes

LED - RED	LED - GREEN	Meaning
ON	OFF	Firmware-Update active
Fast alternate flashing with green	Fast alternate flashing with red	No Firmware found
Blinking		Calibrating after Switch-On
OFF	ON	Normal Function

6 Technical Data

Size: 68 x 27 x 20mm
 Weight: 20g
 Power Consumption: 40 .. 150mA according to Input Voltage

7 Declaration of conformity

EC Conformity in accordance with EC directives

The MUX box was developed, designed and manufactured in compliance with the EC Directives

Electromagnetic Compatibility 2004/108 / EC

to ensure applicable harmonized standard EN 61000-6-1

More details can be read in the EC declaration of conformity under www.weatronic.com

