AMTECH communication box EN User Manual

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GETTING TO KNOW AMTECH COMMUNICATION BOX

- Developed to communicate with MiR robots and MiRFleet.
- Converts an electrical signal to a user-defined REST API or Modbus TCP software communication.
- Five programmable inputs.
- Possibility to independently define communication for logical 1 and logical 0.



- Ethernet or WiFi interface
- Power supply from PoE (Ethernet versions only) or external source
- Internal memory and real-time clock backup
- Robust metal box
- WEB interface

Application

- Controlling the robot (MiR) or MiRFleet server via REST API (PUT, POST)
- Communication with the internal PLC (MiR robot) via Modbus (Int32, Float32, Boolean)

CONNECTION

Ethernet version with PoE

Connect the device by a normal uncrossed cable for computer networks to the switch.

Ethernet version without PoE

If the device cannot be powered by the switch via PoE according to the IEEE 802.3af standard, connect the power adapter to the coaxial connector next to the connector for the Ethernet. DC voltage in the range of 11-58 V is expected. (The positive pole is inside, the input for the power supply has a reverse polarity protection.)

WiFi version

Connect the power adapter to the coaxial connector next to antenna. DC voltage in the range of 11-58 V is expected. (The positive pole is inside, the input for the power supply has a reverse polarity protection.)

Inputs/ Output

Connect inputs and output. The inputs are intended to connect the contacts according to the following diagram, against GND. The output is a changeover relay contact for max. 50V 2A.



IP ADDRESS'S SETTINGS

IP address's settings - Ethernet version

Now you need to set the device to the correct IP address. The factory setting is **192.168.1.254** and the network mask is 255.255.255.0.

IP address's settings by using the robot's web interface

You can connect to the device by using a web browser at the address specified as follows: **http://192.168.1.254/** (an example is given for the factory default IP address)

http://192.168.1.254/ Click the gear symbol at the top right to see the configuration.

vacuation	C - C U & 192.108.1	254/settings.html			
ission Run		AMTECH communication box	Settings	(; v1218.01.10; cAmEmilian	ve Default Reload
polen		Homepage	Network		
t32		Network	DHCP Device's IP address	192.168.0.110	
oat32		Security	Netmask	255.255.255.0	
utput SET		SNMP	Gateway IP address DNS server's IP address	192.168.0.1 192.168.0.1	
Aktualini čas v zavljevri. 18.01.2009 12.20 02		HTTP GET	WEB port	80	

IP address's settings by using Ethernet configurator

If your network is not compatible with this range, set the device address suitable for your network using the Ethernet configurator.

Juner		
IP Address 192.168.1.84 192.168.1.100 192.168.1.53 192.168.1.44	MAC Address 00-20-4A-91-09-AA 00-20-4A-9C-1C-48 00-20-4A-86-77-B9 00-20-4A-9F-F6-DB	 How do I set the IP address? Device is connected but it is does not appear in the list You cannot set the IP address?
Set Device	Add Device	
MAC address:		
Check if the ID ad	dress is not assignment to other device	

IP address's settings - WiFi version

Connect the AMTECH communication box to your Windows computer by using the supplied microUSB cable. Run the WiFi Configurator software on the PC. In this program set the parameters of your WiFi network and also the IP address to which the device should be available.

√iFi Configuration		Vendor Name	Product Name	VID / PID	Serial Number
SSID:	papousinetwork	Papouch s.r.o.	Papago 2PT WiFi v1	2047/0301	691A1A4703000B00
Password:					
WiFi security:	WPA2 (AES)				
DHCP:					
IP:	192.168.1.254				
Net mask:	255.255.0.0				
MAC:	00-80-A3-94-A1-39				
	Load Save				

CONFIGURATION

Configuration is done via a web interface. The basic network parameters can also be set via Telnet (see page 16). The web interface is accessible on the IP address of the device. (The default address is 192.168.1.254.)

After entering the IP address, the main page will appear the latest measured values.

The web interface is secured with a username and password. You can choose a separate password for the user (who can only display the values on the main page) and for the administrator (who can also change settings).

The configuration is displayed when you click on the icon of gears in the upper right corner. The configuration is divided into sections according to the types of settings and is available in English and Czech.

Function	← → C ☆ @ 192.1	68.1.254/settings.html			
Evacuation		AMTECH		(+1218.01.10; cAmComBox	ve Default Reload
Mission Run		communication box	Settings		
Boolen		Homepage	Network		
Int32		Network	Device's IP address	192.168.0.110	
Float32		Security	Netmask	255.255.255.0	
Output		SNMP	Gateway IP address DNS server's IP address	192.168.0.1 192.168.0.1	
Absulated Cas v zavlgeret, 112,01,3009 12,215.02		HTTP GET	WEB port	80	
A Příhlášen: Administrátor (<u>Qdhlást</u>) Papago SHDI 100 ETH ver. 1.5/3	1000				

Network

This section contains the configuration of network parameters.

Network	
DHCP	
Device's IP address	192.168.0.110
Netmask	255.255.255.0
Gateway IP address	192.168.0.1
DNS server's IP address	192.168.0.1
WEB port	80

If the box for assigning addresses via DHCP is ticked, the fields for *Device's IP address, Netmask, Gateway IP address* and *DNS server's IP address* are reset and upon reloading the settings they are filled again with data obtained from the DHCP server.

These options are available as an Authentication method: Open, WEP (open), WEP (shared), WPA (TKIP), WPA (AES), WPA2 (TKIP), WPA2 (AES), WPA2 (Mixed).

Security

The section for setting the password of the user (can only access the main page) and the administrator (has access to both the main page and the settings).

Security	
User password	Not set
Confirm user password	
Administrator's password	Not set
Confirm administrator's password	
Current Administrator's password	

After saving, the passwords are no longer displayed for security reasons. The fields for entering the password show Not set, if the password has not been entered, or Keep original password, if the password has been entered but is not to be displayed.

SNMP

Here you can configure communication via SNMP used for data collection in large networks.

SNMP	
Allow trap sending	
Send SNMP trap upon change	
Periodical sending of measured-out values	0
SNMP manager's IP address	0.0.0.0
Read community name	public
Write community name	private

HTTP GET

This section is used to set the sending of measured data to a remote server.

HTTP GET		
Allow HTTP GET sending		
Send HTTP GET upon change		
Sending interval	0	
WEB server's address	0.0.0.0	
WEB Port	0	
Folder containing scripts		
Script name		
GUID		
Encryption Key	Not set	
Retype Key		
Send test HTTP GET		

Inputs / Output

The following settings are available for inputs and output:

Inputs and output configuration

Input sampling rate

Input and output configuration

Input sampling rate

The sampling rate of the inputs is common to all inputs and set when the input pulse should be recorded as valid. Other settings are individual for each input.

20



The input value is sampled with a period of 1 ms. The input state is considered valid if the same value is read several times in succession. That, how many times the same value must be read in order to record, is set as the Input Sampling Rate.

Common

Sending method

Choice of communication method

- RESR API states are sent via the REST API
- Modbus TCP states are sent via the Modbud TCP

Input 1: Common

Sending method AP address and port

Rest API	\$
192.168.0.44:80	

IP adress and port

- IP address of the device to which the status is to be sent (eg MiR robot, MiRFleet, WISE)
 - The REST API typically uses port 80
 - Modbus TCP typically uses port 502

Counter

Possibility to name the input with setting the counter. Visualization of the counter is on the Homepage.

Input 1: Counter

Input name	Evacuation
Method of operation	Counter off
After this number of recorded impulses:	1
add this value to the counter:	1
Decimal count	0
Unit	

REST API

The setting is active at Sending method - REST API

Input 1: Rest API	
Sending method	PUT 🗘
Path for 1	/api/v2.0.0/fire_alarms/1
Path for 0	/api/v2.0.0/fire_alarms/1
Authorization string	YWRtaW46OGM2OTc2ZTViNTQxME
Request body for 1	{ "alarm_on": true }
Request body for 0	{"alarm_on":false}

Sending method PUT or POST can be selected.

Path for 1/ Path for 0

Path for logical 1/0 without specifying IP address and port (example: /api/v2.0.0/fire_alarms/1) The maximum string length is 30 characters.

Authorization string

Copy from robot web interface or MiRFleet (*Help-API documentation*) The maximum string length is 120 characters.

*	MiR_sim	Connected to MiRFleet"	No missions in queue. 🖊 ALL OK 🛦 📑	ENGLISH A	🛔 administrator 🔺	▲	IIII) 100%
	Hel Robot In API doc Remote Service Manual	D nformation > umentation > vaccess > book >	API documentation. Get started with the REST API for the robot. All functionality found in the robot interface can also be accessed through the robot's REST API. In fact, the REST API is what the robot interface uses to communicate with the robot - and so can your software. You can connect to the robot using either http://mic.com:8080 or http://mic.com/api. Alternatively you can use the robot's IP address if you are not connected to the robot's own WiFi. For authorization, please refer to the given example, automatically generated when you enter your username and password.	Username admin Password] Language English	s ch API documentation		₹°
			GET /status HTTP/1.1 Content-Type: application/json Accept-Language: en_US Host: 192.168.0.107:8080 Authorization: Basic YWRtaW460GM20Tc2ZTViNTQxMDQxNWJkZTkwOGJkNGRlZTE1ZGZiMTY3YT1j01	DczZmM0YmI4	YTgxZjZmMmFiNDQ4YT	'kxOA==	

ATTENTION!! Copy only the code behind Basic.

example:

Request body for 1/ Request body for 0 Request body (REST API) for logic 1/0. The maximum string length is 100 characters.



Tip: In the robot interface or MiRFleet Help / API Documentation you have examples of structure.

MiRFleet™	2.7.9 FLEET REST API [Base URL: 95.80.198.90:3080/api/v2.0.0]
PUT /fire_alarms/(id) PI Modify the values of the fire alar Sending method Metoda odesilání dat Parameter	T/fire_alarms/(id) Path / Cesta /api/v2.0.0/fire_alarms/1 m with the specified ID
Name	Description Authorization string / Autorizační řetězec
Authorization * required string (header) Accept-Language * required string (header) id * required integer (path) Fire_alarm * required (body)	Authorization header Basic WWRtaW460CM20Tc2ZTVINTQxMDQxNWJkZTkw0CJkNGRIZTE12GZIMTY3YTIJ0DczZmM0YmI4YTgxZjZmMmFINDQ4YTkxOA== Language header en_US The id to modify 1 The id to modify Example Value Model
	<pre>{ "alarm_on": true, Request body / Tělo požadavku }</pre>

Modbus TCP

The setting is active at Sending method – Modbus TCP

Input 3: Modbus TCP	babus ICP	
Modbus ID	1	
Number type for 1	Boolean	\$
Register for 1	1	\$
Value written for 1	1	
Number type for 0	Boolean	\$
Register for 0	1	\$
Value written for 0	0	

Modbus ID Settings Modbus ID

Number type for 1/ Number type for 0 Selection of register number type for logical 1/0

- Int32
- Float32

Boolean

Register for 1/0

Selection of register for logical 1/0

- Int32 in the range 1-100
- Float32 in the range 101-200
- Boolean in the range 1-6

CALSHEDGARDS SETUP	System	PLC registers Read and set PLD registers on the robot.	P Set register
ii		Integers (1 - 100)	Floats (101 - 200)
MONITORING		Registers 1-100 are 32 bit integers, i.e. whole positive or negative numbers.	Registers 101-200 are 64 bit floating point numbers, i.e. positive or negative decimal numbers.
SYSTEM		Registers 1-100 are used for example in shelf applications where registers 13 and 14 are used to	Registers 101-200 can be used where decimals are required for example to obtain precise
4		lower and raise the shelf device respectively.	information on distance travelled.
ноок		If Modbus is enabled, the corresponding holding register addresses are displayed next to the PLC register. Noticel One PLC register uses two holding register addresses.	If Modbus is enabled, the corresponding holding register addresses are displayed next to the PLC register. Notice! One PLC register uses two holding register addresses.
(?) HELP			
Ð		Show registers from 1 to 20 Filter	Show registers from 101 to 120 Filter
LDU OUT		1 0 *41001+41002	101 0 * 42001 + 42002
			100 0

Action commands

Title	Description	Permission	Data type	Coils
Continue robot	Address of the coil used to trigger the Continue action on the robot	R/W	Boolean	[1]
Pause robot	Address of the coil used to trigger the Pause action on the robot	R/W	Boolean	[2]
Cancel current mission	Address of the coil used to cancel the ongoing mission, if any	R/W	Boolean	[3]
Clear mission queue	Address of the coil used to clear the entire mission queue	R/W	Boolean	[4]
Clear error	Address of the coil used to clear the errors on the robot.	R/W	Boolean	[5]
Continue robot	Address of the coil used to trigger the Continue action on the robot	R/W	Boolean	[6]

Value written for 1/0

The value to be written for logical 1/0.

Other settings

In this section you can set the time, the language of the website, etc. You can select Czech or English as the language. The setting "Name of device" can be used to search the AMTECH communication box on the network. Just enter the AMTECH communication box name in the browser address bar. If the name contains a space, it is not possible to use the name to search the AMTECH communication box on the network!

Other settings	
Name of the device	AMTECHcommunicationbox
Language	English 🗘
Date and time	
Synchronize device's time with NTP server	
NTP server's IP address	0.0.0.0
Time zone	(UTC+01:00) Bratislava, Prague 🕏
Auto daylight saving	
Synchronize device's time with this PC's time	5

Examples of input settings

Communication with MiRFleet	Input 1: Common	
Fire alarm activation / deactivation	Sending method	Rest API 🗘
<u>(PUT)</u>	AP address and port	192.168.0.44:80
	Input 1: Rest API	
	Sending method	PUT \$
	Path for 1	/api/v2.0.0/fire_alarms/1
Attention!	Path for 0	/api/v2.0.0/fire_alarms/1
Enter the authorization string without	Authorization string	YWRtaW460GM20Tc2ZTViNTQxME
Basic The request body has two possible writting methods	Request body for 1	{ "alarm_on": true }
Writing methods		{"alarm_on":false}
	Request body for 0	

**	MiRFleet™		ENGLISH 🔺	administrator	A EVACUATE ALL ZONES
ON SHE CARDES	Liele				
*	нер	API documentation Get started with the REST API for the fleet.			
11	Fleet information				
MONITORING	API documentation	All functionality found in the fleet interface can also be accessed through the fleet's REST API. In fact, the REST AP	Pl is what the add	rname nin	
SVETEM	Remote access	You can connect to the fleet using either http://mir.com:8080 or http://mir.com/api. Alternatively you can use the fl	leet's IP Pass	sword	
() HELP	Manual	address if you are not connected to the fleet's own WIFI. For authorization, please refer to the given example, automatically generated when you enter your username and p	assword.	••	
.00 OUT			_	Launch API documentation	
		GET /status HTTP/1.1 Content-Type: application/json Accept-Language: en_US Host: 95.80.198.90:3080:8080 Authorization: Basic YWRtaW46OGM20Tc2ZTVINTQxMDQxNWJkZTkwOGJkNGR12TE1ZGZiMT	YYYJjODczZmM0	YmI 4YTgxZ jZmMmFiNDQ.	4YTkxDA==

Authorization:

YWRtaW46OGM2OTc2ZTViNTQxMDQxNWJkZTkwOGJkNGRlZTE1ZGZiMTY3YTljODczZmM0Yml4YTgxZjZm MmFiNDQ4YTkxOA==

Communication with robot via REST	Input 2: Common	
API	Sending method	Rest API 🔶
Mission's addition to the queue	AP address and port	192.168.0.107:80
(POST)	Input 2: Rest API	
	Sending method	POST \$
Attention	Path for 1	/api/v2.0.0/mission_queue
Attention	Path for 0	/api/v2.0.0/mission_queue
Enter the authorization string without	Authorization string ZGlzdHJpYnV0b3I6NjJmM	
Basic The request body has two possible write methods	Request body for 1	<pre>{ "mission_id": "db3a80f5-6f47- 11ea-b40d-001c42ac5871" }</pre>
	Request body for 0	



Authorization:

ZGlzdHJpYnV0b3I6ZTNiMGM0NDI5OGZjMWMxNDlhZmJmNGM4OTk2ZmI5MjQyN2FINDFINDY0OWI5Mz RjYTQ5NTk5MWI3ODUyYjg1NQ== Communication with robot via Modbus TCP Boolean

Continue action on the robot

Input 3: Common

Sending method	Modbus TCP	\$
AP address and port	192.168.0.107:502	
Input 3: Modbus TCP		
Modbus ID	1	
Number type for 1	Boolean	\$
Register for 1	1	\$
Value written for 1	1	
Number type for 0	Boolean	\$
Register for 0	1	\$
Value written for 0	0	



Communication with robot via Modbus TCP Int32

Setting value 1 for register 3 / logic 1 and setting value 0 for register 4 / logic 0

Integers (1 - 100) Registers 1-100 are 32 bit integers, i.e. whole positive or negative numbers. Registers 1-100 are used for example in shelf applications where registers 13 and 14 are used to lower and raise the shelf device respectively. If Modbus is enabled, the corresponding holding register addresses are displayed next to the PLC register. Notice! One PLC register uses two holding register addresses. Show 2

w regi	sters from 1 to 20 Filter	
1	0 dopravnik 💋	*41001 + 41002 🖍
2	0 PLC register 2	*41003+41004 🖍
3	1 PLC register 3	*41005+41006 🖍
4	1 PLC register 4 💋	*41007+41008

Communication with robot via Modbus TCP Float32

Setting value 1.5 for register 103 / logic 1 and setting value 1.5 for register 104 / logic 0.

Floats	(101 - 200)

Registers 101-200 are 64 bit floating point numbers, i.e. positive or negative decimal numbers

Registers 101-200 can be used where decimals are required for example to obtain precise information on distance travelled.

If Modbus is enabled, the corresponding holding register addresses are displayed next to the PLC register. Notice! One PLC register uses two holding register addresses.



Input 4: Common

Sending method AP address and port Input 4: Modbus TCP

Modbus ID Number type for 1 Register for 1 Value written for 1 Number type for 0 Register for 0 Value written for 0

Modbus TCP	\$
192.168.0.107:502	
1	
Int 32	\$
3	¢
1	
Int 32	\$
4	\$

1

Input 5: Common

Sending method

IP address and port Input 5: Modbus TCP

Modbus ID
Number type for 1
Register for 1
Value written for 1
Number type for 0
Register for 0
Value written for 0

Modbus TCP	\$
192.168.0.107:502	
1	
Float 32	\$
103	\$
1.5	
Float 32	\$
104	\$
1.5	

INDICATIONS:

Two LEDs integrated in the Ethernet connector:

<u>Yellow – LINK</u>: lights when the device is connected by cable to a switch or PC. <u>Green – ACT</u>: indicates communication over the Ethernet.

Two LEDs to the left under the Ethernet connector:

<u>Yellow (right)</u>: lights when the connection is established via Spinel or Modbus. <u>Red-green (left)</u>:

- the green light is lit and the red light flashes when the device is working properly and is connected to one sensor at least
- the green and red LEDs are lit when the device works, but is not connected to any sensor
- the red LED lights to indicate an error



Inputs and output status indicators:

There are red LEDs above each input which indicate that the input contact is closed.



RESET

Follow the instructions below to restore the default configuration set by the manufacturer. Unlike when the reset is performed via the web interface or using the Telnet protocol, the IP address is also reset to the default value of 192.168.1.254.

- 1. Disconnect the device from the power supply.
- 2. Press the button located in a small hole on the right side under the Ethernet connector.
- 3. Turn on the power and wait for about 10 seconds until the yellow light below the Ethernet connector flashes 4 times.
- 4. Release the button.



TECHNICAL PARAMETERS

Inputs

Туре	for contact
Number	5
Contact closed current	13 mA
Working voltage	24 V
Maximum sampling frequency	1 kHz
Connector	removable screw terminal block

Output

Туре
Maximum switching voltage AC
Maximum switching voltage DC
Maximum switching current
Maximum switching power of resistive load
Protective varistor
Connector

Ethernet interface

Connection Connector GET encryption

WiFi interface

Specification Operating frequency Antenna connector

Clock circuit and internal memory

Clock backup method (RTC) RTC backup time after power outage

Device electronics

PoE power supply Power supply from an external source Current consumption from ext. source at 15 V Current consumption from ext. source at 24 V Current consumption from PoE Consumption changeover contact of relay 50 V 85 V 2 A 62,5 VA / 60 W U_{AC} = 60 V; E_{MAX} = 5 J; C = 0,64 nF removable screw terminal block

TBase 10/100 Ethernet RJ45 128 bit AES; Rijndael; CFB method

IEEE 802.11 b/g a IEEE 802.11n (single stream) 2,4 GHz SMA RP

capacitor (not replaceable by the user) 5 days (if the device was previously connected to a power source for three hours without interruption at least)

according to IEEE 802.3af 11 - 58 V DC (with reverse polarity protection) typ. 120 mA *WiFi version*: 31 mA typ. 72 mA *WiFi version*: 20 mA typ. 32 mA typ. 1,8 W

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Power connector Operating temperature range Dimensions (without connectors) Housing material Degree of protection	coaxial 3,8 × 1,3 mm; + is inside -20 to +70 °C 88 × 70 × 25 mm anodized aluminium IP30
Other parameters	
Weight	typ. 145 g
Default settings of the Ethernet	
IP address	192.168.1.254
MASK	255.255.255.0 (8 bits; mask C)
IP address of the gateway	0.0.0.0
Available designs	
Mountable on 35 mm DIN rail	optional accessory

Do not hesitate to contact us if you have any other requirements concerning the design and functions of AMTECH communication box.

