

# ELGAS-2 (CP II)

## ELGAS-2 (CP II) communication protocol

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### Supported device types and versions

The protocol supports communication with **ELCOR-2**, **microELCOR-2**, **ELCORLite**, **miniELCOR**, and **ELCORplus** devices (made by the [ELGAS](#) company) that recalculate a gas quantity.

When communication is established, the current device configuration is read. From it, for each configured object (identified by the "Name" field), its address ("ID" field) necessary for the configuration of the I/O tag and the object type ("Object type" field) can be determined. Example of a reading:

```
--> : 2. ( 263)RECORD_TYPE_30
Length      : 75
Object type : 30
Number      : 0
ID          : 1
Adr_inCurrent : 6
Adr_inArchiv : 10
BitControl  : 155-DATA, DAY, INVOICE, METROL,
Name        : Pressure p1
Unit        : bar
Digit       : 8.697641897E-05
Offset      : 0
Low_Limit   : 0.80000001192093
High_Limit  : 5.1999998092651
Serial Nr   : 1986200392
ErrBit(T_ERR_CURRENT) offset=1076
ErrBit(T_ERR_BIN_ARC) offset=94
ErrBit(T_ERR_DAT_ARC) offset=0
AdrRec inCur : 10
AdrRec inMonth: 0
Nr of Pattern : 0
Tithe        : v
```

The following object types are currently supported:

Object type	Description
30	Analog value (unsigned short)
31	Binary (bit)
32	Counter (unsigned long)
33	Counter - normalized (double float)
34	Flow (float)
35	Flow - normalized (float)
36	Conversion factor (float)
45	Counter - default (unsigned long)
46	Counter - normalized default (double float)
47	Compressibility (float)
49	Counter - correctional (unsigned long)
53	Counter (double float)
54	Counter - default (double float)
61	Device error (bit)
62	Sum of alarms (bit)

64	Code of input (bit)
65	Timer (unsigned long)
70	Setpoint (bit ?)
74	Compressibility Z (float)
75	Compressibility Zb (float)
80	Analog statistical quantity (unsigned short)
81	Counter - statistical (unsigned long)
82	Counter - recalculated statistical (unsigned long)
83	Statistical quantity of flow/compressibility/recalc.number (float)

## Communication line configuration

- Communication line category: [Serial](#), [SerialOverUDP Device Redundant](#).

The asynchronous transmission parameters are set according to the setting of a specific device.

## Communication station configuration

- Communication protocol: **Elcor ELGAS-2 (CP II)**.
- Station address:
  - Node address: value in the range of 0 to 65535.
  - Address: meter address, a value in the range of 0 to 255.
  - If both addresses are 0, the device must answer obligatorily.

Password for reading: maximum of 6 characters is allowed if the password is set in the device (ELCOR-2 only).

## Station protocol parameters

[Configuration dialog box](#) - tab „Parameters“.

They influence some optional parameters of the protocol. The following station protocol parameters can be set:

**Table 1**

Full name	Meaning	Unit	Default value
Device Type	Selection of device type.	<b>ELCOR-2 or microELC OR-2</b>	ELCOR-2
Retry Count	The delay between request retries in case of a communication failure.		3
Wait First Timeout	Delay after sending the request before reading the response.	ms	100 ms
Wait Timeout	The delay between response readings until it is completed.	ms	100 ms
Max. Wait Retry	Retry count of response reading until it is completed.		30
Static Data Read Period	Period of reading static - configuration data (microELCOR-2 only).	min	60 min
Hourly Archive Periodic Reading	A period for the reading of hourly archives (0-60 min). Value 0 disables the reading.	min	0 min
Wake Up Sequence Length	Length of 'wake-up' data sequence, which is sent before the request after a longer communication pause.	0 .. 50 bytes	25 bytes
Wake Up Each Query	Insert 'wake-up' data sequence before each request.	YES/NO	NO
Wake Up Character	Form 'wake-up' data sequence from the specified characters.	0 .. 255	255
Group Source Address	Group source address (address of the D2000 KOM process).	0 .. 65535	0
Source Address	Source address (address of the D2000 KOM process).	0 .. 255	0
Full Debug	A high level of communication tracking, the received values of I/O tags and other debug information is shown.	YES/NO	NO

## I/O tag configuration

Possible value types of I/O tags: **Di, Ai, Ci, TxtI, TiA**.

### The ELCOR-2 device

Table 2 contains the list of the main parameters of the device.

Tables 3 to 8 contains the list of variable configuration and informative data according to the parameter type. DESC(*ind*) parameter represents the common data of all parameters. It describes the quantity. The current value of quantity can be acquired by the configuration of the I/O tag with numerical address - index ***ind*** (number from 1 and higher). To find out the technical units - configure text of I/O tag with the address UNIT(*ind*).

**Table 2** - Device parameters - Main device parameters

Object description	Value type	Address	Units
The serial number of the device	Ci, TxtI	SN	
Referential temperature	Ai	TB	°C
Referential pressure	Ai	PB	kPa
Firmware version	TxtI	FW	
Station name	TxtI	DESC	
CO2 concentration	Ai	TAB(0)	%
N2 concentration	Ai	TAB(1)	%
Heat of combustion	Ai	TAB(2)	MJ/m3
Relative density	Ai	TAB(3)	
H2 concentration	Ai	TAB(4)	%
H2S concentration	Ai	TAB(5)	%
He concentration	Ai	TAB(6)	%
H2O concentration	Ai	TAB(7)	%
O2 concentration	Ai	TAB(8)	%
Ar concentration	Ai	TAB(9)	%
CO concentration	Ai	TAB(10)	%
C1H4 concentration	Ai	TAB(11)	%
C2H6 concentration	Ai	TAB(12)	%
C3H8 concentration	Ai	TAB(13)	%
iC4H10 concentration	Ai	TAB(14)	%
nC4H10 concentration	Ai	TAB(15)	%
iC5H2 concentration	Ai	TAB(16)	%
nC5H2 concentration	Ai	TAB(17)	%
C6H14 concentration	Ai	TAB(18)	%
C7H16 concentration	Ai	TAB(19)	%
C8H18 concentration	Ai	TAB(20)	%
C9H20 concentration	Ai	TAB(21)	%
C10H22 concentration	Ai	TAB(22)	%

**Table 3** - Device parameters - Analog values

Object description	Value type	Address	Units
Analog value - transducer serial No.	TxtI, Ci	SN( <i>ind</i> )	
Analog value - the upper limit of measuring range	Ai	HL( <i>ind</i> )	
Analog value - the lower limit of measuring range	Ai	LL( <i>ind</i> )	
Analog value - technical units	TxtI	UNIT( <i>ind</i> )	
Analog value - name	TxtI	DESC( <i>ind</i> )	

**Table 4** - Device parameters - Counter

Object description	Value type	Address	Units
Counter - serial number of gas meter	Txtl, Ci	SN( <i>ind</i> )	
Counter - technical units	Txtl	UNIT( <i>ind</i> )	
Counter - name	Txtl	DESC( <i>ind</i> )	

**Table 5** - Device parameters - Error counter

Object description	Value type	Address	Units
Error counter - primary counter number	Txtl, Ci	CNT( <i>ind</i> )	
Error counter - technical units	Txtl	UNIT( <i>ind</i> )	
Error counter - name	Txtl	DESC( <i>ind</i> )	

**Table 6** - Device parameters - Standard counter

Object description	Value type	Address	Units
Standard counter - primary counter number	Txtl, Ci	CNT( <i>ind</i> )	
Standard counter - calculation number	Txtl, Ci	CLC( <i>ind</i> )	
Standard counter - technical units	Txtl	UNIT( <i>ind</i> )	
Standard counter - name	Txtl	DESC( <i>ind</i> )	

**Table 7** - Device parameters - Conversion factor

Object description	Value type	Address	Units
Conversion factor - analogue (pressure) number	Ci	CNTP( <i>ind</i> )	
Conversion factor - analogue (temperature) number	Ci	CNTT( <i>ind</i> )	
Conversion factor - pressure error volume	Ai	DEFVALP( <i>ind</i> )	kPa
Conversion factor - temperature error volume	Ai	DEFVALT( <i>ind</i> )	°C
Conversion factor - compressibility error volume	Ai	DEFVALK( <i>ind</i> )	
Conversion factor - technical units	Txtl	UNIT( <i>ind</i> )	
Conversion factor - name	Txtl	DESC( <i>ind</i> )	

**Table 8** - Device parameters - Standard flow rate

Object description	Value type	Address	Units
Standard flow rate - primary flow number	Ci	CNT( <i>ind</i> )	
Standard flow rate - calculation number	Ci	CLC( <i>ind</i> )	
Standard flow rate - technical units	Txtl	UNIT( <i>ind</i> )	
Standard flow rate - name	Txtl	DESC( <i>ind</i> )	

## The microELCOR-2 device

As an address of the I/O tag, also the data from "Address" or "Alternate address" columns can be used.

**Table 9** - Actual values

Object description	Value type	Address	Default address	Units
Primary volume	Ai	OH.1	V	m3
Standard volume	Ai	OH.2	VN	Nm3
Error primary volume	Ai	OH.3	VEST	m3
Error standard volume	Ai	OH.4	VNEST	Nm3
Primary flow rate	Ai	OH.5	Q	m3/hour
Standard flow rate	Ai	OH.6	QN	Nm3/hour

Compressibility ratio	Ai	OH.7	K	
Actual pressure	Ai	OH.8	P	kPa
Actual temperature	Ai	OH.9	T	K
Calculation number	Ai	OH.10	Z	
Device temperature	Ai	OH.11	TPR	°C
Operating value - rest (only in VF input)	Ai	OH.12	VZB	

**Table 10** - Service data

Object description	Value type	Address	Default address	Units
Type + serial number	Txtl	SE.1	VCE	
The serial number of the temperature sensor	Txtl	SE.2	VCT	
The serial number of the pressure transducer	Txtl	SE.3	VCP	
Version SW+HW	Txtl	SE.4	VER	
Customer number	Txtl	SE.5	CZ	
The serial number of the gas meter	Txtl	SE.6	PVC	
Network address	Txtl	SE.7	ADR	
Constant of gas meter	Ci	SE.8	KP	0=1, 1=0.1, 2=0.01, 6=100, 7=10
Measuring interval	Ci	SE.9	IM	
Interval of data sending through a serial line	Ci	SE.10	IV	
Start hour of the gas day	Ci	SE.11	CD	
Start of measurement	TiA	SE.12	DSM	
Date and time of the device	TiA	SE.13	DAT	
Battery capacity	Ci	SE.14	BAT	%
Actual status	Txtl	SE.15	OS	
Configuration bytes	Txtl	SE.16	KB	
The communication speed of a serial line	Ci	SE.17	RK	4=4800, 5=9600, 6=19200
CRC 51	Ci	SE.18	C1	
CRC MSP 430	Ci	SE.19	C2	
CRC EEPROM1	Ci	SE.20	C3	
CRC EEPROM2	Ci	SE.21	C4	
CRC EEPROM3	Ci	SE.22	C5	
Battery voltage	Ai	SE.23	UPRHEX	V
Display configuration	Ci	SE.24	KDIS	
Bits of permission to write the items	Txtl	SE.25	W_RUN	
Customer's region	Txtl	SE.26	REGION	
Saving interval in the hourly archive	Ci	SE.27	IU	
Quantity of diff. pulses between IMP and IMP1	Ci	SE.28	IMP1_PI	0=off, 255=on permanently
Input pulse ratio	Ci	SE.32	I_V_DP	
Bits of write permission in RUN by a user	Ci	SE.33	WU_RUN	
Actual status 2	Ci	SE.34	OS2	
The setting of pulse ratio of gas meter VF on m3	Ci	SE.35	KPVF	

**Table 11** - Parameters

Object description	Value type	Address	Default address	Units
Base pressure	Ai	PA.1	PN	kPa
Base temperature	Ai	PA.2	PT	°C
Default pressure	Ai	PA.3	PEST	kPa

Default temperature	Ai	PA.4	TEST	°C
Default compressibility level	Ai	PA.5	SK	
Min. pressure limit	Ai	PA.6	PMIN	kPa
Max. pressure limit	Ai	PA.7	PMAX	kPa
Min. temperature limit	Ai	PA.8	TMIN	°C
Max. temperature limit	Ai	PA.9	TMAX	°C
Limit of max. flow rate	Ai	PA.10	QMAX	m3/hour
Method of compressibility calculation	Ci	PA.11	MK	
CO2 concentration	Ai	PA.12	KCO2	%
N2 concentration	Ai	PA.13	KN2	%
H2 concentration	Ai	PA.14	KH2	%
Relative density	Ai	PA.15	KD	%
Heat of combustion	Ai	PA.16	KHON	kWh/m3

**Table 12** - Minimums/maximums

Object description	Value type	Address	Default address	Technical units
Pressure under the limit	Ai	MI.1	PMMIN	kPa
Time of pressure under the limit	TiA	MI.2	DPMMIN	
Pressure above the limit	Ai	MI.3	PMMAX	kPa
Time of pressure above the limit	TiA	MI.4	DPMMAX	
The temperature under the limit	Ai	MI.5	TMMIN	°C
Time of temperature under the limit	TiA	MI.6	DTMMIN	
Temperature above the limit	Ai	MI.7	TMMAX	°C
Time of temperature above the limit	TiA	MI.8	DTMMAX	
Flow rate above the limit	Ai	MI.9	QMMAX	m3/hour
Time of flow rate above the limit	TiA	MI.10	DQMMAX	
Time of reset of minimums/maximums	TiA	MI.11	DNUL	

Parameters and minimums/maximums are read in a period which is set by the [Static Data Read Period](#) protocol parameter.

## Literature

- Description of system -ELCOR and microELCOR-2 - operating schedule (Elgas 1. 6. 2006)
- Reference books of producer [ELGAS s.r.o.](#)

## Changes and modifications

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## Document revisions

- Ver. 1.0 - April 22th, 2009 - the creation of the document.



Related pages:

[Communication protocols](#)