

Specifications

Input Interface	RS485 for net control and data acquisition
Output Interface	RS232 for connection to PC or serial printer
Datalogger Memory	32 Kb
Power Supply	mains adapter 9 VAC/DC
Consumption	max. 110 mA
Operating Temperature / Humidity	0...50 °C / 0...80% RH
Protection Class: front / terminals	IP54 / IP20

Warranty and Support

.....
serial number

.....
manufacturing date

QC check mark(passed)
(stamp)

88 Slavyanska Str.
P.O.Box 378
Plovdiv 4000, BULGARIA
tel: +359 32 646523, 646524
fax: +359 32 634089, 646517
e-mail: support@comeco.org

Warranty

COMECO warrants this product to be free from defects in materials and workmanship for 2 years. If your unit is found to be defective within that time, we will promptly repair or replace it. This warranty does not cover accidental damage, wear or tear, or consequential or incidental loss. This warranty does not cover any defects caused by wrong transportation, storage, installation, or operating (see 'Specifications').

Technical support

In the unlikely event that you encounter a problem with your COMECO device, please call your local dealer or contact directly our support team.

QD-8.2.4-WC

v2-05.12

INTERFACE ADAPTER / DATALOGGER

IA300 InfoPrint

OPERATION MANUAL



Please read this Operation Manual before mounting and operating!
Save the Manual for future references!

User Software "InfoPrint Command Interface"

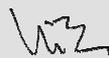
- ◆ "InfoPrint Command Interface" is a specialized program purposed to control and configure IA300 from PC site.
- ◆ Program interface is shown on the facing page.

 *The program interface may differ from one software version to another!*

Declaration of Conformity



The undersigned hereby declares, on behalf of COMECO Inc., that this device has been manufactured in compliance with standards EN 61000 and EN 61010, and meets the requirements of Directives 2004/108/EC and 2006/95/EC.



Vladimir Sakaliyski
CEO
COMEKO Inc.

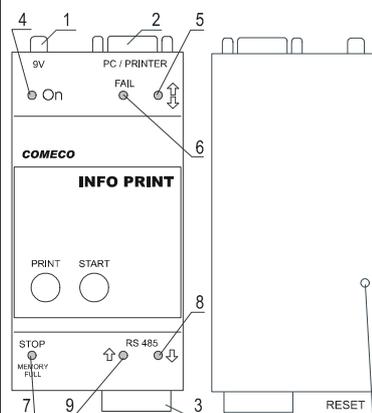
Waste Disposal



Do not dispose of electronic devices together with household waste material!

If disposed of within European Union, this product should be treated and recycled in accordance with the laws of your jurisdiction implementing the WEEE Directive 2002/96 on the Waste Electrical and Electronic Equipment.

Familiarizing



- 1 - power supply 9 V
- 2 - RS232 interface (to PC or printer)
- 3 - RS485 interface (to network of COMECO devices)
- 4 - On - indication for power on
- 5 - RS232 - Comm - lights during communication with PC or printer
- 6 - FAIL - lights in case of unsuccessful attempt for communication with PC or printer
- 7 - STOP / MEMORY FULL - lights constantly when the system is stopped (communication with devices not allowed); blinks when datalogger memory is full
- 8 - RS485 - Tx - lights during data transmitting
- 9 - RS485 - Rx - lights during data receiving

Front and rear panels

The diagram on the left shows IA300 front panel view along with the device connector and terminal denotations, LED locations and respective functions, as well as the position of the **RESET** key on the device back.

Keys

- ◆ The **START** key serves for starting and stopping the system.
- ◆ The **PRINT** key serves for printing the data saved in datalogger memory in the form of graphics (in datalogger graphic mode).
- ◆ Pressing **START** and **PRINT** simultaneously and holding them until the 'STOP / MEMORY FULL' LED changes its state (approx. 4 s) deletes datalogger memory.
- ◆ Pressing **RESET** restarts the device. Use only as an extreme measure, i.e. in case of total system failure due to massive electromagnetic disturbances.



Key function activates after pressing, but only after the current communication or printing has completed.

Overview

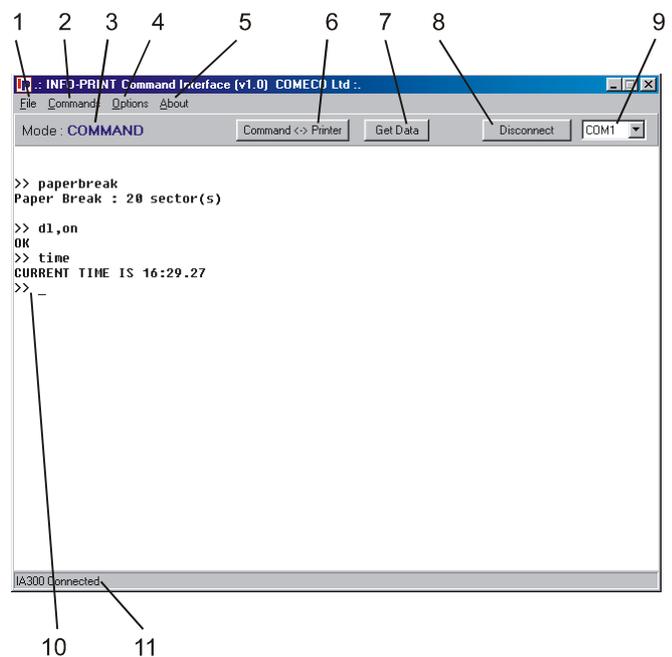
The IA300 interface adapter "InfoPrint" is an intelligent device designed especially to collect data from different COMECO devices equipped with RS485 interface and net address. IA300 supports up to 32 devices, connected into a RS485 net and combined into 8 groups, thermal serial printer, and RS232 communication with PC. The information collected during the data-acquisition process can be used for printing up to 4 process charts online and up to 8 charts offline, and for data logging in the adapter memory and offline downloading to the computer for further processing. All configuration procedures (including real-time clock) can be easily programmed using the "InfoPrint Command Interface" software or other terminal program. With its attractive price and enhanced capabilities, IA300 interface adapter "InfoPrint" is a powerful solution for building multi-point monitoring systems.

IA300 datalogging capabilities include:

- saving up to 32 Kb of data in memory;
- offline data download via RS232;
- offline data printing using OT801 serial printer;
- 'memory full' indication;
- 'fail' indication;
- setting date and time;
- configuring via terminal program.



COMECO provides each IA300 interface adapter with a compatible serial printer!



- 1 – FAIL menu (opening file for automatic configuration)
- 2 – COMMANDS menu (command fast sending)
- 3 – device current mode indicator
- 4 – OPTIONS menu (program settings)
- 5 – ABOUT (software version info)
- 6 – mode changing key (COMMAND <-> PRINTER)
- 7 – data unloading key (from datalogger memory to PC)
- 8 – PC communication key
- 9 – menu for communication port selection
- 10 – command line
- 11 – status bar

Configuring

Baud Rate 9600
Data Bits 8
Parity none
Stop Bits 1
Flow Control none



When "InfoPrint Command Interface" is used, the serial port properties are set automatically!



When you press [+][+][+], IA300 will switch between 'PRINTER' and 'COMAND' modes, but only after the current communication or printing has finished.

- ◆ First ensure that the properties of the PC serial port to be used for communication with IA300 are as shown on the left.
- ◆ The IA300 adaptor can be configured from the command row of the "InfoPrint Command Interface" software or other terminal program such as Microsoft® Windows® "HyperTerminal".

Operating modes

IA300 has two operating modes, 'COMMAND' and 'PRINTER'. The default mode after power-off or reset is 'PRINTER'. Switching operating modes is possible through the terminal program by pressing [+] from the PC keyboard. When IA300 is in 'COMMAND' mode, the symbol >> appears on the PC display.

Configuration commands

GR	group configuration
UN	unit configuration
CH	channel configuration
GRAPH	graphics configuration
DL	datalogger configuration
GETDATA	unload memory data
TIMESTAMP	absolute / relative time
MODE	terminal / printer output
PRINTMODE	graphic / text printing
PAPERBREAK	set print legend
BAUD	set baud rate
DATE	show / set date
TIME	show / set time
CLEAR	reset configuration
BATT	battery check
SYS	system settings
VER	software version
HELP or ?	list of commands

Command syntax

- ◆ [command],[param1],[param2],[param3]
e.g. UN,1,1,RT484
- ◆ After a successful command execution, IA300 returns the OK string.



All uppercase and lowercase letters may be used in command syntax!

Configuration Examples – part V

```
>> CLEAR
>> GR,1,Room,30
>> GR,2,Hall,60
>> UN,1,21,RT484

>> UN,2,45,RT384

>> UN,3,47,TC800B

>> CH,1,1,1,2,RoomT1,\oC
>> CH,2,1,1,2,RoomT2,\oC
>> CH,3,1,2,1,HallT1,\oC
>> CH,3,2,2,1,HallT2,\oC

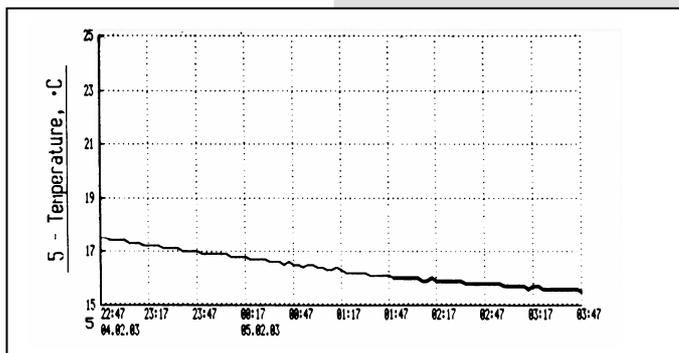
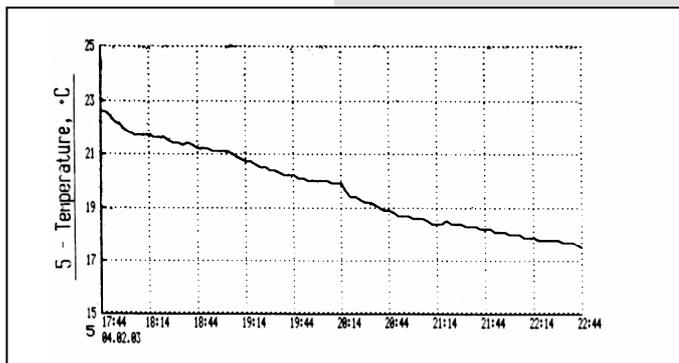
>> MODE,printer
>> PRINTMODE,text
>> TIMESTAMP,absolute
>> DL,off
>> +++
PRINTER MODE
```

Two groups with two channels each for text printing

- clears all settings (configuration reset).
 - creates group #1 named "Room", sample time 30 s.
 - creates group #2 named "Hall", sample time 60 s.
 - configures device unit #1 with net address '21' and communication protocol for device RT484.
 - configures device unit #2 with net address '45' and communication protocol for device RT384.
 - configures device unit #3 with net address '47' and communication protocol for TC800 (BINARY).
 - configures channel #1 named "RoomT1", belonging to unit #1 of group #1, resolution 0.01 °C.
 - configures channel #1 named "RoomT2", belonging to unit #2 of group #1, resolution 0.01 °C.
 - configures channel #1 named "HallT1", belonging to unit #3 of group #2, resolution 0.1 °C.
 - configures channel #2 named "HallT2", belonging to unit #3 of group #2, resolution 0.1 °C.
 - sets the output device as PRINTER.
 - sets printing mode in TEXT format.
 - sets X-axis time format as ABSOLUTE.
 - disables DATALOGGING.
- Press [+] PC key 3 times to stand-by the system.
 Unplug PC cable and connect printer cable.
 Start the system by pressing IA300 START key.

Configuration Examples – part IV

After 10 hours of testing the so set up system configuration, pressing IA300 **PRINT** key prints these graphics:



 The two parts of the graphics are printed one by one on the thermal paper.

Detailed Command Description – part I

 Each group may comprise from 1 to 32 measuring channels.

Group configuring command GR
The GR command defines group number, group name, and group sample time.

```
>> GR,1,Room-21,300
creates a group #1 named
"Room-21" with sampling time
of 300 seconds.
```

- ◆ To define / redefine group:
GR, [number], [name], [sample time]
- number: 1...8
- name: text string (max. 11 symbols)
- sample time: 6...4,294,967,295 s

```
>> GR,1
shows the following information
on the terminal display:
```

- ◆ To read group parameters:
GR, [number]
- number: 1...8

```
-----
GROUP INFO
-----
GroupName      : Room-21
GroupNumber    : 1
Sampl. Time    : 300
Status         : Enabled
-----
```

```
>> GR,1,OFF
disables group #1.
```

- ◆ To enable / disable group:
GR, [number], [on/off]
- number: 1...8
- on/off: ON (enable) or OFF (disable)

```
>> GR,1,DEL
deletes group #1 and shows
the following information:
```

- ◆ To delete group:
GR, [number], DEL
- number: 1...8

```
-----
GroupNumber    : 1
GroupName      : Room-21
Status         : Enabled
-----
```

OK

```
>> GR,LIST
shows the information
about all pre-defined groups.
```

- ◆ To list all groups:
GR, LIST

Configuration Examples – part II

```
>> CLEAR
>> GR,1,Room,30
>> UN,1,21,RT484
>> UN,2,15,RT384
>> UN,3,47,TC800A
>> CH,1,1,1,1,Temp-1,\oC
>> CH,2,1,1,1,Temp-2,\oC
>> CH,3,1,1,1,Temp-3,\oC
>> CH,3,2,1,0,Temp-4,\oC
>> MODE,printer
>> PRINTMODE,graph
>> PAPERBREAK,10
>> GRAPH,1,1,1,-10,50
>> GRAPH,2,2,1,0,50
>> GRAPH,3,3,1,0,50
>> GRAPH,5,3,2,-50,400
>> TIMESTAMP,absolute
>> DL,graph
>> +++
PRINTER MODE
```

Four channels for graphic printing

- clears all settings (configuration reset).
 - creates group #1 named "Room", sample time 30 s.
 - configures device unit #1 with net address '21' and communication protocol for device RT484.
 - configures device unit #2 with net address '15' and communication protocol for device RT384.
 - configures device unit #3 with net address '47' and communication protocol for TC800 (ASCII).
 - configures channel #1 named "Temp-1", belonging to unit #1 of group #1, resolution 0.1 °C.
 - configures channel #1 named "Temp-2", belonging to unit #2 of group #1, resolution 0.1 °C.
 - configures channel #1 named "Temp-3", belonging to unit #3 of group #1, resolution 0.1 °C.
 - configures channel #2 named "Temp-4", belonging to unit #3 of group #1, resolution 1 °C.
 - sets the output device as PRINTER.
 - sets printing mode in GRAPHIC format.
 - Y-axis legend (and eventual offline graphics) to be printed at intervals of 10 X-axis sections.
 - configures channel #1 of unit #1 from group #1 to be printed as graph #1 with -10...50 Y-axis.
 - configures channel #1 of unit #2 from group #1 to be printed as graph #2 with 0...50 Y-axis.
 - configures channel #1 of unit #3 from group #1 to be printed as graph #3 with 0...50 Y-axis.
 - configures channel #2 of unit #3 from group #1 to be printed as graph #5 with -50...400 Y-axis (offline printing at intervals of 10 sections).
 - sets X-axis time format as ABSOLUTE.
 - enables datalogging in graphic-storing mode.
- Press [+] PC key 3 times to stand-by the system.
Unplug PC cable and connect printer cable.
Start the system by pressing IA300 **START** key.

Detailed Command Description – part III

 Single-channel units, e.g. RT484, have one channel with number '1'. Channel numbers for the multi-channel units such as TC800 match their internal channel numbers.

Channel configuring command CH

To configure a measured channel, define the following parameters: unit number, channel number, group (of which the channel is part) number, measured value decimal point position, channel name, and measurement unit. Up to 40 channels can be configured!

```
>> CH,2,1,1,1,Temperature,\oC
creates a channel #1 named
"Temperature" and belonging
to unit #2 of group #1,
that outputs temperature values
in [°C] with 0.1 degree resolution.
```

- ◆ To define / redefine channel:
CH, [unit#], [channel#],[group#], [decimal point], [name], [units]
- unit number: 1...32
- channel number: 1...16
- group number: 1...8
- decimal point position: 0...3
- name: text string (max. 14 symbols)
- measurement unit (max. 4 symbols)

```
>> CH,2,1
shows the following:
```

- ◆ To read channel configuration:
CH, [unit#], [channel#]
- unit number: 1...32
- channel number: 1...16

```
-----
CHANNEL INFO (0)
-----
Unit          : 2
Channel       : 1
Name          : Temperature
Group        : Room-21
Dimension     : °C
Dec.Point     : 1
-----
```

```
>> CH,2,1,DEL
deletes channel #1 belonging
to unit #2 and shows:
```

- ◆ To delete channel:
CH, [unit#], [channel#], DEL
- unit number: 1...32
- channel number: 1...16

```
-----
Unit          : 2
Channel       : 1
Name          : Temperature
Group        : Room-21
Dimension     : °C
Dec.Point     : 1
-----
```

OK

Detailed Command Description – part II

Unit configuring command UN

The UN command defines all hardware units connected to the net through unit number, net address, and communication protocol.

```
>> UN, 2, 1, RT484
creates a unit #2
(device type RT484)
with net address '1'.
```

```
>> UN, 2
displays the following:
```

```
-----
UNIT INFO
-----
Number      : 2
Address     : 1
Protocol    : RT484
-----
```

```
>> UN, 2, DEL
deletes unit #2 and shows:
```

```
-----
Number      : 2
Address     : 1
Protocol    : RT484
-----
OK
```

```
>> UN, LIST
lists all the configured units
(e.g. #1 and #2):
```

```
-----
Number      : 1
Address     : 45
Protocol    : TC800B
-----
Number      : 2
Address     : 1
Protocol    : RT484
-----
```

◆ To define / redefine device unit:

```
UN, [number], [address], [protocol]
- number: 1...32
- address: 1...255
- protocol: RT384, RT484, RT290,
            TRIS, RT08,
            TC800A (ASCII),
            TC800B (BINARY)
```

◆ To read unit (device) parameters:

```
UN, [number]
- number: 1...32
```

◆ To delete unit:

```
UN, [number], DEL
- number: 1...32
```

◆ To list all units:

```
UN, LIST
```

Configuration Examples – part III

Datalogger configuration for writing one channel and further downloading to PC

- clears all settings (configuration reset).
- creates group #1 named "Room", sample time 30 s.
- configures device unit #1 with net address '21' and communication protocol for device RT484.
- configures channel #1 named "Temp-1", belonging to unit #1 of group #1, resolution 0.1 °C.
- sets time format as ABSOLUTE.
- enables datalogging.
- sets datalogger in data-storing mode.
- includes channel #1 of unit #1 for writing in datalogger memory.

Press [+] PC key 3 times to stand-by the system. Unplug PC cable and connect printer cable. Start the system by pressing IA300 **START** key.

```
>> CLEAR
>> GR, 1, Room, 30
>> UN, 1, 21, RT484

>> CH, 1, 1, 1, 1, Temp-1, \oC
>> TIMESTAMP, absolute
>> DL, on
>> DL, data
>> CH, 1, 1, DL, ON

>> +++
PRINTER MODE
```

One channel for offline graphic printing

- clears all settings (configuration reset).
- creates group #1 named "Room", sample time 3 min.
- configures device unit #1 with net address '1' and communication protocol for RT484.
- configures channel #1 named "Temperature", belonging to unit #1 of group #1, resolution 0.1 °C.
- sets low alarm limit for channel #1 to 16 °C.
- sets the output device as PRINTER.
- sets printing mode in GRAPHIC format.
- configures channel #1 of unit #1 from group #1 to be printed as offline graph #5 with 15..25 Y-axis.
- sets datalogger in graphic-storing mode.
- sets X-axis time format as ABSOLUTE.
- Y-axis legend to be printed through 10 X-axis sections.
- disables datalogging.

Press [+] PC key 3 times to stand-by the system. Unplug PC cable and connect printer cable. Start the system by pressing IA300 **START** key.

```
>> CLEAR
>> GR, 1, Room, 180
>> UN, 1, 1, RT484

>> CH, 1, 1, 1, 1, Temperature, \oC
>> CH, 1, 1, LO, 16
>> MODE, printer
>> PRINTMODE, graph
>> GRAPH, 5, 1, 1, 15, 25

>> DL, graph
>> TIMESTAMP, absolute
>> PAPERBREAK, 10

>> DL, off
>> +++
PRINTER MODE
```

Detailed Command Description – part IV

```
>> CH, LIST
lists all the configured channels
(e.g. channel #1 of units #1 and #2):
```

```
-----
Unit        : 1
Channel     : 1
Name        : Temperature
Group       : Room-21
Dimension   : °C
Dec.Point  : 1
-----
Unit        : 2
Channel     : 1
Name        : Humidity
Group       : Room-21
Dimension   : %
Dec.Point  : 0
-----
```

```
>> CH, 2, 1, LO, 15
>> CH, 2, 1, HI, 30
sets low alarm limit of 15
and high alarm limit of 30
for channel #1 of unit #2.
```

```
>> CH, 2, 1, LO, DEL
>> CH, 2, 1, HI, DEL
deletes low and high alarm limits
for channel #1 of unit #2.
```

◆ To list all channels:

```
CH, LIST
```

◆ To set channel alarm:

```
CH, [unit#], [channel#], [type], [value]
- unit number: 1...32
- channel number: 1...16
- alarm type: LO (low) or HI (high)
- alarm value: value
```

◆ To delete channel alarm:

```
CH, [unit#], [channel#], [type], DEL
- unit number: 1...32
- channel number: 1...16
- alarm type: LO (low) or HI (high)
```

⊥ under-range

⊥ over-range

⊥ out of range

× no answer

M manual mode



Notes:

- ◆ In text mode, all values outside the alarm limits are printed inversely (e.g. 1 2 3 4 5 6).
- ◆ In graphic mode, when the line crosses the alarm limit, it becomes thick. In some particular alarm situations, special symbolic messages are printed.

Configuration Examples – part I

One channel for text printing

- clears all settings (configuration reset).
- creates group #1 named "Room" with sample time of 30 seconds.
- configures device unit #1 with net address '21' and communication protocol for device RT484.
- configures channel #1 named "Humidity", belonging to unit #1 of group #1, resolution 1%.
- sets the output device as PRINTER.
- sets printing mode in TEXT format.
- sets time format as ABSOLUTE.
- disables datalogging.

Press [+] PC key 3 times to stand-by the system. Unplug PC cable and connect printer cable. Start the system by pressing IA300 **START** key.

```
>> CLEAR
>> GR, 1, Room, 30

>> UN, 1, 21, RT484

>> CH, 1, 1, 1, 0, Humidity, %
>> MODE, printer
>> PRINTMODE, text
>> TIMESTAMP, absolute
>> DL, off
>> +++
PRINTER MODE
```

One channel for graphic printing

- clears all settings (configuration reset).
- creates group #1 named "Room" with sample time of 30 seconds.
- configures device unit #1 with net address '21' and communication protocol for device RT484.
- configures channel #1 named "Temp-1", belonging to unit #1 of group #1, resolution 0.1 °C.
- sets the output device as PRINTER.
- sets printing mode in GRAPHIC format.
- configures channel #1 of unit #1 from group #1 to be printed as graph #1 with -10...50 Y-axis.
- sets X-axis time format as ABSOLUTE.
- disables datalogging.

Press [+] PC key 3 times to stand-by the system. Unplug PC cable and connect printer cable. Start the system by pressing IA300 **START** key.

```
>> CLEAR
>> GR, 1, Room, 30

>> UN, 1, 21, RT484

>> CH, 1, 1, 1, 1, Temp-1, \oC

>> MODE, printer
>> PRINTMODE, graph
>> GRAPH, 1, 1, 1, -10, 50

>> TIMESTAMP, absolute
>> DL, off
>> +++
PRINTER MODE
```

Detailed Command Description – part VI



In **DATA** mode, all data are stored in datalogger memory in text format for further offline usage. In **GRAPH** mode, the data are stored in graphic format allowing offline graphic printing.

>> CH, 2, 1, DL, ON
includes channel #1 of unit #2 for writing in datalogger memory.



In **ASCII** format, data keep their original device format. Data in **RAW** format are formatted as follows:

FF FF no input / no connection

FF FE ADC out of range

FF FD ADC over-range

FF FC ADC under-range

FF FB sensor break

FF FA too noisy signal

FF F9 device failure

FF F0 manual mode (RT290)

x1 x2 x1 – MSB, x2 – LSB;
v = x1 x2 / 4;
if v > 9,999, v = 10000 - v;
measured value =
v * 0.1^{x2 mod 4}

Datalogger configuring command **DL**

- ◆ To set datalogger mode:
DL, [mode]
- mode: DATA or GRAPH
- ◆ To enable/disable data storing ('DATA' mode):
DL, [on/off]
- ON (enable) or OFF (disable)
- ◆ To erase datalogger memory:
DL, CLEAR
- ◆ To set datalogger channel:
CH, [unit#], [channel#], DL, [on/off]
- unit number: 1...32
- channel number: 1...16
- on/off: ON or OFF

Datalogger memory unloading command **GETDATA**

This command allows data transfer from datalogger memory to PC.

GETDATA, [format]
- format: ASCII or RAW

Time stamp format changing command **TIMESTAMP**

TIMESTAMP, [format]
- format: ABSOLUTE or RELATIVE

Detailed Command Description – part VII



The default output mode is 'PRINTER'!



The default printing mode is 'GRAPH'!



If the number of sections is set to '0', the function is disabled!



The default baud rate is 4800 bps.



Enter either command without parameters to view current date or time.

Output mode changing command **MODE**

Use this command to send output data either to the printer, or to the PC display.

MODE, [mode]
- mode: PRINTER or THERMINAL

Print mode changing command **PRINTMODE**

This command specifies whether to print output data in graphic or in text format.

PRINTMODE, [mode]
- mode: TEXT or GRAPH

Legend setting command **PAPERBREAK**

This command sets the interval, in terms of number of X-axis sections, at which a Y-axis legend is to be printed.

PAPERBREAK, [sections]
- sections: 0...255

Baud Rate setting command **BAUD**

This command sets the RS485 communication rate (Baud Rate).

BAUD, [rate]
- rate: 1200, 2400, 4800, 9600

Clock setting commands **DATE** and **TIME**

- ◆ To set date:
DATE, [day], [month], [year]
- day: 1...31
- month: 1...12
- year: 2003...9999
- ◆ To set time:
TIME, [hours], [minutes], [seconds]
- hours: 0...23
- minutes: 0...59
- seconds: 0...59

Detailed Command Description – part VIII

System initializing command **CLEAR**

This command clears all system settings and stored data.

Battery status checking command **BATT**

This command shows battery life in percents. When battery charge falls below 30%, a low-battery warning message is printed. Replace the battery.

System info command **SYS**

This command shows the current system settings. No parameters are required.

Software version command **VER**

This command shows the current firmware version. No parameters required.

Help info command **HELP** or **?**

This command shows the list of commands. No parameters required.

Printing Special Symbols

entered	printed
\o	o
\2	2
\a	α
\b	β
\u	μ
\w	Ω

The symbol \ entered as a part of the channel name, group name, or measurement unit before certain characters render special symbols for printing.



IA300 allows printing Cyrillic characters!

Detailed Command Description – part V

Graphics configuring command **GRAPH**

- ◆ To set graphics configuration:

GRAPH, [graph#], [unit#], [channel#], [Y-axis min], [Y-axis max]

- graph number: 1...8
- unit number: 1...32
- channel number: 1...16
- Y-axis minimum value: down to -999.9
- Y-axis maximum value: up to 9,999.9

- ◆ To delete configured graphics:

GRAPH, [graph#], DEL

- graph number: 1...8



Notes:

- ◆ IA300 has 3 main operating modes:
 - *online mode* - for reading channel info and real-time printing;
 - *offline mode* - for reading channel info and storing it in the datalogger memory, and for printing at any time in graphic format only;
 - *mixed mode* - for reading info from 8 channels and for processing 4 channels online and 4 - offline.
- ◆ All channels configured for graphic printing must have equal sample times!

