

Detailed description of RS commands

(valid from V1.10 version variable drives)

Conventions applicable to the syntax of all commands:

adr = address, from 000 to 255
<CR> Carriage Return (ascii 13)
<LF> Line Feed (ascii 10); between square brackets: this character is not compulsory.

Status values **ok** : command executed correctly

Error messages
Err0 : adjustment error (out of bounds)
Err1 : command error (syntax)
Err2 : parameter error (e.g. non-hexadecimal character)
Err3 : context error
Err4 : checksum error

ADR Specifies the address of the device for networking

Syntax #adr**ADR**aaa<CR>[<LF>]
 adr = address of the device before the command
 aaa = new address of the device
 condition: $000 \leq aaa \leq 255$

Result #aaa,ok or Err2

This command is used to allocate a specific number to each of the products making up a network (loop for RS 232 or parallel for RS 485).

Note: it is important to note down the number allocated to each device.

BRK Stop the pump by braking (ATP 80/100 and ATH 31 series only)

Syntax #adr**BRK**<CR>[<LF>]

Result #adr,ok

This command is used to brake the motor electrically, which is particularly effective at high speed. It is currently only available for the variable drive units of the ACT 200T and ACT 201H.

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CKS Enables or disables reply strings checksum

Syntax #adr**CKSON**<CR>[<LF>]
 Enables ascii character checksum at the end of
 a reply string
 or
 #adr**CKSOFF**<CR>[<LF>]
 Disables ascii character checksum at the end of
 a reply string

Result #adr,ok,**S** for CKSON
 #adr,ok for CKSOFF

This feature allows the user to test if there is any transmit error with a reply string.

S is a character whose ascii value is the checksum, on 7 bits, of all the character ascii values from the beginning of the reply string to the character before **S**. The 8th bit of **S** (MSB, Most Significant Bit) is always 1.

CYC Starts the specified running-in cycle

Syntax #adr**CYC1**<CR>[<LF>] to start running-in program 1,
 or
 #adr**CYC2**<CR>[<LF>] to start running-in program 2

Result #adr,ok

Running-in program 1 should be executed after a pump maintenance operation (change of bearings).

At the end of the program, the pump maintenance parameters are updated and the «maintenance requested» alert can be cleared.

Program 2 is used after regreasing (ATP series only), or after prolonged storage (ATH 20/40, ATH 30 and ATH31).

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DLI Defines the DataLogger transmission interval

Syntax #adr**DLI**xxx<CR>[<LF>]
 xxx: DataLogger send interval in seconds
 condition: $001 \leq xxx \leq 255$

Result #adr,ok or Err2

See also: **DLR** Note: if ok, the interval sent is stored in user memory.

DLR Enables DataLogger operation (only with RS 232)

Syntax #adr**DLR**<CR>[<LF>]

Result #adr,sssss,nnnnn,iiii,tttt,uuuu.o,www,ppp,vvv

Returns current values:

sssss : current speed (in rpm)
nnnnn : speed set point (in rpm)
iiii : current (in mA)
tttt : pump working speed (in hours)
uuuu.o : (reserved)
www : pwm (reserved)
ppp : pump temperature (°C)
vvv : variator temperature (°C)

The main characteristics of the pump and its controller are sent over the RS link, at the rate defined by the **DLI** command.

See also: **DLI**, **LNG**, **SEP**, **SHT** Note: any new characters arriving on the serial port (RS 232) will cancel the automatic DataLogger transmission.

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ECH Enables or disables command echoing

Syntax #adr**ECHON**<CR>[<LF>]
enables all characters received to be echoed over the serial port (RS 232 only).
or
#adr**ECHOFF**<CR>[<LF>]
disables all characters received from being echoed over the serial port.

Result #adr,ok

Comments:
- This command is disabled in RS 485 operation, the value OFF is required.
- Using a loop-type RS 232 network requires «ECHON» operation.

HDR Defines the start character for a command reply string

Syntax #adr**HDR**nnn<CR>[<LF>]
nnn: 3-digit decimal value of the ascii code of the corresponding character (with leading zeros).
condition : $032 \leq nnn \leq 255$

Result ?adr,ok ? is the desired character.
#adr,ErrX if error

Allows the user to distinguish between the first character in a «command» string (for which # cannot be changed) and the first character of a «reply» string.
Affects the first character of ALL replies.
Default value: the hash sign, # (ascii code = 035)
If ok, the selected value is automatically stored in user memory.

IDN Identifies the device which is communicating, and its software version

Syntax #adr**IDN**<CR>[<LF>]

Result #adr, VS.... - Vx.zz'
or
#adr, VS.... - Vx.zz for «Alcatel pump type»

Returns the type of Variable drive Supervisor, the software version (x), the software edition (zz), and the type of pump for which this variable drive is set up.

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LEV Returns the state of the parameters defined by SET

Syntax #adrLEV<CR>[<LF>]

Result #adr,nnnnn,sssss,aaaa,hhhhh or
#adr,nnnnn rpm,sssss rpm,aaaa mA,hhhhh hours

Returns the current values:

nnnnn : speed set point
sssss : stand-by speed set point
aaaa : current set point
hhhhh : alert level for pump bearing maintenance

Syntax **Complete cabinet only:**
#adrLEV10<CR>[<LF>]

Result #adr,nnnnn,sssss,hhhhh,g,cccc,eeee,dddd,pppp,qqqq

Returns current values:

nnnnn : nominal speed set point (in rpm)
sssss : stand-by speed set point (in rpm)
hhhhh : alert level for pump bearing maintenance (in hours)
g : regreasing counter
cccc : pump working time (in hours)
eeee : electronic working time (in hours)
dddd : start delay (max 14459 s, that is 240 mn 59 s)
pppp : time to venting (max 3599 s, that is 59 mn 59 s)
qqqq : venting time (max 3599 s, that is 59 mn 59 s)

See also: **LNG**, **SEP**, **SHT**

LNG Returns the strings sent with the identification sub-strings

Syntax #adrLNG<CR>[<LF>]

Result #adr,ok
AVT>

Allows the parameters returned by the **DLR**, **LEV** and **SPD** commands to be identified with sub-strings.

Also generates the «AVT>» prompt each time a <CR> character is received.

See also: **SHT**

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NSP Swithes the speed set point to the nominal speed value

Syntax #adrNSP<CR>[<LF>]

Result #adr,ok

The speed set point for the pump is set to its nominal value.
This configuration is automatically saved in user memory.
This mode of operation prevents the use of the «RPM» command.

See also: **RPM, SBY**

OPT Used to select possible user choices

Syntax #adrOPT1 n<CR>[<LF>]

choice of parameters on the analog output:

- n = 0 : real pump speed
- n = 1 : pump current
- n = 2 : temperature of pump body
- n = 3 : temperature of internal electronics

#adrOPT2 n<CR>[<LF>]

choice of temperature unit:

- n = 0 : degrees Centigrade
- n = 1 : degrees Fahrenheit

ACT 201 H miniboard only:

#adrOPT4 n<CR>[<LF>]

Priority choice between Remote mode and RS 232 :

- n = 0 : Remote mode (I/O) has priority

RS 232 is not allowed to control the pump but the data reading is available.

- n = 1: RS 232/485 commands have priority.

"Remote" and reduced "speed switch" are not taken into account.
The miniboard is essentially controlled by the RS commands.

Note : in Remote mode, when the running-in is selected and launched (J1 input connector), the running speed is independent of the switch and no actions are authorized on the input "remote".
Only the TMP OFF command allows the running -in stop.

Complete cabinet only:

#adrOPT10 n<CR>[<LF>]

auto-starting:

- n = 0 : yes
- n = 1 : no

#adrOPT11 n<CR>[<LF>]

- buzzer: n = 0 : without
- n = 1 : with

Result #adr,ok

See also: **SEL**

Comment: The choice of the temperature unit affects the results of the **DLR** and **STA** strings and the display (if cabinet fitted).

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RPM Defines the speed set point in stand-by mode

Syntax #adr**RPM** nnnnn<CR>[<LF>] or #adr**RPM**nnnnn<CR>[<LF>]

Result #adr,ok or #adr,ErrX
1, out of range; 2, parameters ; 3, context (not in Stand-by mode)

See also: **NSP, SBY** Comment: if ok, the new speed is automatically stored in user memory.

SAV Saves the internal parameters in user's memory

Syntax #adr**SAV**<CR>[<LF>]

Result #adr,ok

Saves the current context (except for running-in cycles).
If this command is sent when the pump is being supplied,
it can for example allow automatic re-start in the event of
a power cut.

SBY Switches the speed set point to the stand-by value

Syntax #adr**SBY**<CR>[<LF>]

Result #adr,ok

Resets the stand-by speed to its last stored value, and allows
it to be modified if an «**RPM**» command is sent.
See also: **NSP, RPM** This configuration is automatically stored in user memory.

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SEL Returns the state of the parameters defined by OPT

Syntax #adr**SEL**<CR>[<LF>]

Result #adr,a,u

a : Returns choice of parameters on the analog output:

a = 0 : real pump speed

a = 1 : pump current

a = 2 : temperature of pump body

a = 3 : temperature of internal electronics

u : Returns the choice of temperature unit:

u = 0 : degrees Centigrade u = 1 : degrees Fahrenheit

Complete cabinet only:

Syntax #adr**SEL10**<CR>[<LF>]

Result #adr,a,u,s,b

a : Returns choice of parameters on the analog output:

a = 0 : real pump speed

a = 1 : pump current

a = 2 : temperature of pump body

a = 3 : temperature of internal electronics

u : Returns the choice of temperature unit:

u = 0 : degrees Centigrade u = 1 : degrees Fahrenheit

s : Returns auto-starting choice:

s = 0 : no s = 1 : yes

b : Returns buzzer choice:

b = 0 : without b = 1 : with

SEP Defines the character which separates the parameters in a reply

Syntax #adr**SEP**nnn<CR>[<LF>]

nnn: 3-digit decimal value of the ascii code of the desired character (with leading zeros).

condition : 000 ≤ nnn ≤ 255

Result #adr,ok or #adr,ErrX if error

Allows the user to select the character which separates the parameters returned by the **DLR**, **STA** and **LEV**

commands. Default value: comma «,» ascii code = 044

If ok, the selected value is automatically stored in user memory.

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SET Defines the internal operating parameters

Syntax #adr**SET**1 hhhhh<CR>[<LF>] limit maintenance time
000<hhhh>65535
#adr**SET**2 sssss<CR>[<LF>] maximum time for start-up
(future)

Complete cabinet only:
#adr**SET**10 ccccc<CR>[<LF>] : pump working time
(in hours)
#adr**SET**11 eeeee<CR>[<LF>] : electronic working time
(in hours)
#adr**SET**12 g<CR>[<LF>] : regreasing counter
(0 to 2 max)
#adr**SET**13 ddddd<CR>[<LF>] : start delay (max 14459s,
that is 240mn 59s)
#adr**SET**14 pppp<CR>[<LF>] : time to venting (max 3599s,
that is 59mn 59s)
#adr**SET**15 qqqq<CR>[<LF>] : venting time (max 3599s,
that is 59mn 59s)

Result #adr,ok or #adr,ErrX
See also: **LEV**

SHT Returns the transmitted string without the identification sub-string

Syntax #adr**SHT**<CR>[<LF>]

Result #adr,ok

The strings sent following **DLR**, **LEV** and **SPD** commands will now be sent without the parameter identification sub-strings (e.g: without the units).

See also: **LNG**

SPD Returns the current speed

Syntax #adr**SPD**<CR>[<LF>]

Result #adr,nnnnn
See also: **LNG**, **SHT** #adr,nnnnn rpm

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STA Returns the status of the internal dynamic parameters

Syntax #adr**STA**<CR>[<LF>]

Result #adr,xxxxxx,yyyyyy,zzzzzz,sssss,iiii,www,ppp,vvv,tttt<CR><LF>

adr: address

543210

xxxxxx status bits:

- 5 - RS echo (1->off)
- 4 - String long (0) / short (1)
- 3 - On (1) / Off (0)
- 2 - reduced or nominal speed reached (1)
- 1 - standby (1)
- 0 - running-in (1)

yyyyyy fault bits:

- 5 - variable drive temperature
- 4 - motor temperature
- 3 - excess current
- 2 - sensors or start-up
- 1 - external
- 0 - pump not connected

zzzzzz alert bits:

- 5 - reserved (future use)
- 4 - reserved (future use)
- 3 - variable drive temperature
- 2 - motor temperature
- 1 - start-up time exceeded (future)
- 0 - operating time exceeded

sssss current speed value in rpm

iiii current value in mA

www reserved (pwm value)

ppp pump temperature value

vvv variable drive temperature

tttt pump operating time value



Reminder : The «#» character at the start of the reply string can be set with the «**HDR**» command. The «,» character which separates the parameters in the reply string can be modified with the «**SEP**» command.

TMP Defines the operating state of the turbomolecular pump

Syntax #adr**TMPON**<CR>[<LF>] : start pump rotation
#adr**TMPOFF**<CR>[<LF>] : stop pump

Result #adr,ok or #adr,Err3 if the pump is already in the state requested (context error)