Domintell Light Protocol guide and DRS2320x / ETHERNET communication interface.

The goal of this document is to describe Domintell's RS232 & ETHERNET interfaces. It will help you to make the good choice between the options available. Input specifications are the same for all modules (data to Domintell). Output protocol specifications are different (data from Domintell)

DRS23201 – DRS23202 - DRS23203 // DETH02 – DETH03 - DETH04 :
The hardware does not change but the functions depend on the firmware.
These modules are explained below in details.

Table of Contents

1. Document revisions

v1.27.08 : 24/10/2018

DETH02 (v26) + v1.27.08 :

- Statuses of DPBC01/DPBC02/DPBC04/DPBC06 are now correctly handled and forwarded to LightProtocol clients in DETH02.

v1.27.08 : 24/10/2018

Fixes

- Description of some commands/statuses were not correct (`IS8 4F8I10`)

v1.27.07 : 07/11/2017

APPINFO

- DPBRLCD02 : Replace BRL module identifier by the official PRL

v1.27.06 : 24/07/2017

APPINFO

- Add codepage used in APPINFO header 3.4.d Decoding APPINFO

DINTDALI01 (v14) (and DDMX01):

- Add information about extra type given in APPINFO 3.4.d Decoding APPINFO

Add information about software to test LightProtocol

- Hercules or PacketSender can be used

DRS23202 (v24) + DETH02 (v25) + v1.27.02 :

- Add : DPBRLCD02 (Rainbow LCD PushButton) - PRL :
  Same info as DPBTLCD01/02

v1.27 : 06/05/2015

Add information about software to test LightProtocol

- Hercules or PacketSender can be used

DRS23202 (v24) + DETH02 (v25) + v1.27.02 :

- Add : DPBRLCD02 (Rainbow LCD PushButton) - PRL :
  Same info as DPBTLCD01/02

v1.26 : 06/05/2015

DRS23202 (v23) + DETH02 (v24) + v1.26.00 :

- Add : ModBus Daikin interface - MBD :

```
MBD   201T22.7 23.0 AUTO 23.0 (integrated T° sensor - heating)
MBD   201U22.7 26.0 OFF 26.0 (integrated T° sensor - cooling)
MBD   201D0301 (Daikin RTD-NET: 2 outputs for FAN & Deflector)
```

- Add : DPBR0x (Rainbow range buttons with RGB colors for leds)

```
BR2     2-1Button 1[House|Floor|Room]
BR4    12-2Button 2[House||]
BR6   265-5Button 5[House||]
```

- Add : DISM20 (20 inputs DIN-Rail module)

```
I20     2-1Button 1[House|Floor|Room]
I20     2I010000 (input 01 activated)
I20     2I800000 (input 08 activated)
I20     2I000800 (input 12 activated)
I20     2I000008 (input 20 activated)
```

v1.25 : 17/03/2015

DRS23202 (v22) + DETH02 (v23) + v1.25.00 :

- Add : DINTDALI01: requires 2 bytes for output number!! (max 64)

```
DAL    10-01TL #12345678-1[House||][TYPE=TL]
DAL    10-02LED #87654321-2[House||][TYPE=LED]
DAL    10-08D64 (output 0x08 status @ 100%)
DAL    10-32%D100 (output 0x32 request @ 100%)
```

- Add : DPBL0x (Lithoss range buttons with 8 colors for leds)

```
B81     2-1Button 1[House|Floor|Room]
B82    12-2Button 2[House||]
B84    36-3Button 3[House||]
B86    72-4Button 4[House||]
B86    89-7LED B6 1[House||]
B84   347-6LED B4 2[House||]
B82    84-3LED B2 1[House||]
B81    39-2LED B1 1[House||]
```

v1.23 : 17/11/2014

DRS23202 (v21) + DETH02 (v22) + v1.23.00 :

- Add : DMV01

```
DMV     2-1Output DMV01[House||]
DMV     2-2Output DMV01 2[House||]
DMV     2-3Output DMV01 3[House||]
DMV     2-4Auxiliary 1[House||]
DMV     2-5Auxiliary 2[House||]
```

v1.21 : 22/10/2014

Add chapter 4.2 Initiate communication with DETH02 to correctly handle negotiation between DETH02 and third-party application.

Add note about outdated firmware version of DETH02/DRS23202 in paragraph 3.3.e Samples of strings sent to your Domintell installation.

v1.21 : 09/09/2014

DETH04 is now discontinued.

Improve this documentation

- Chapter
- Add information for %M and %R parameters

v1.21 : 14/11/2013

DETH02 (v21) :

- If delay between two frames sent to Ethernet port of DETH02 module is smaller than 4ms, newer packets may be lost. Wait the answer (if any) or wait at least 5ms between two Ethernet frames.
- Add : fix APPINFO + full test with 2 modules in the same system,

DRS23202 (v20) + DETH02 (v21) + v1.21.00 :

- Add : DVIP01, DVIP02 (inputs only)
- Add : DPBR04

APPINFO :

- Add : infos about ETH reserved command "HELP" in "Input Protocol Specifications" paragraph.
- Improve Cam infos :

```
CAM     1Axis Cam01[AXIS][IP=192.168.0.2]
CAM     2Cam DVIP01[DVIP][DHCP][IP=192.168.0.3]
      [JPG=http://192.168.0.3:80/jpg/image.jpg]
CAM     3Cam DVIP02[DVIP][IP=192.168.0.4]
      [JPG=http://192.168.0.4:80/jpg/image.jpg]
```

- Add input informations :

[NOLINK]
[PUSH=SHORT]: handles short push only
[PUSH=LONG]: handles short + long push

- Add T° sensors informations :

[NOLINK]
[LOCAL]: actions to sensor's modes + dependencies only
[GLOBAL]: actions to sensor's modes + all other GLOBAL sensors
[HMR=0x0D-HMT=0x08]:

HMR=Hide Mode Regul : should not be accessed if 1
Mask MODEREGUL_OFF (0x01)
Mask MODEREGUL_HEAT (0x02)
Mask MODEREGUL_COOL (0x04)
Mask MODEREGUL_MIX (0x08)

HMT=Hide Mode Temp : should not be accessed if 1
Mask MODETEMP_AUTO (0x01) (Low nibble : when heating)
Mask MODETEMP_CONFORT (0x02)
Mask MODETEMP_ABSENCE (0x04)
Mask MODETEMP_GEL (0x08)
Mask MODETEMP_AUTO (0x10) (High nibble : when cooling)
Mask MODETEMP_CONFORT (0x20)
Mask MODETEMP_ABSENCE (0x40)
Mask MODETEMP_GEL (0x80)

v1.20 : 26/03/2013

DRS23202 (v18) + DETH02 (v17) + v1.20.02 :

APPINFO :

DDMX01: Add channels details

```
DMX     91-1DMX output 1 RGBI[House||][4 CHANNELS]
DMX     91-1-CH1:Chan. R[R 0x00-0xFF]
DMX     91-1-CH2:Label G[G 0x00-0xFF]
DMX     91-1-CH3:Chan. B[B 0x00-0xFF]
DMX     91-1-CH4:Chan. I[I 0x00-0x64]
```

Camera list:

```
CAM     1Entrance[IP=192.168.1.10]
```

SYS T° Mode: Modify value infos to [VALU,1-2-5-6,LOOP]

where 1=Absence, 2=Auto, 5=Comfort, 6=Frost

Light protocol : input parameters

'%R01' set Regulation Mode to 1

'%Txx.x' decimal T° value, does not change (Heating setpoint)

'%Uxx.x' decimal T° value, new parameter (Cooling setpoint)

SYS000001 accepts now '%M'

SYS000002 accepts now '%R'

Global sensors are changing mode system variables

Light protocol : output parameters

Does not change: 'Txx.x yy.y TEMPMODE zz.z' where :

X=Measured T°,

y=Actual Heating setpoint T°,

TempMode=sensor T° mode (Absence, Auto, Comfort, Frost)

z=Heating Profile setpoint T°

Add: 'Uxx.x yy.y REGULMODE zz.z' where :

x=Measured T°,

y=Actual Cooling setpoint T°,

RegulMode=regulation mode (0=off, 1=heating, 2=cooling, 3=mixed)

z=Cooling Profile setpoint T°

Add: system variable SYS000002 : Main regulation mode

where 0=Off, 1=heating, 2=cooling, 3=mixed

v1.19 : 12/01/2012

v1.19.17 :

APPINFO : add memo reference : [REF=BIR 23-1] (= memo icon reference)
APPINFO : add input parameters [PUSH=SHORT] [PUSH=LONG] [NOLINK]
APPINFO : displays "END APPINFO .." when finished
APPINFO : displays STATION to get FM station name «STA000001Channel name[64-0100]» (hexa)
APPINFO : version format change : [VERS=0xnn] or [VERS=UNSCANNED]
APPINFO : remove unused system variables (System vars not listed in APPINFO should be ignored)
APPINFO : remove memo type [FOLLOWER]
APPINFO : some system variables are [READONLY]
APPINFO : remove some useless characters : ' ', ':' ...
Light Protocol : add %H, %L params to handle shutters/shutter groups UP (**H**igh) and DOWN (**L**ow)

v1.19 : 06/12/2011

DRS23202 (v16) + DETH02 (v11) + v1.19.15 :

DDMX01 status has new format have change : DMX 1F-2X00EB000000000000
('-' is replaced by 'X' in v11(DETH02) & v16(DRS23202). Cf « Examples of received strings »)

v1.19.15 :

Fix temperature sensor of DTSC02/04 information in PING
Add DDMX01 commands (%X)
Add input simulation commands (%P) (**P**ush)
Fix DAMPLI01 AMP%F with frequency >= 100MHz

v1.19 : 31/03/2011

DRS23202 (v15) + DETH02 (v7) + v1.19.11 :

Handle DTSC02, DTSC04, DTSC35, DDMX01
Several modules can be used on the same installation
DETH02 and DRS23202 are listed in APPINFO with their version

v1.19.11 :

Fix temperature sensor of PBLCD02 information in APPINFO

v1.18 : 27/08/2010

DRS23202 (v14) + DETH02 (v6) :

Info returned by TSBxxxxxx%S is now correct (crlf sequence missing)

v1.18 : 12/07/2010

v1.18.03f : Automatic light protocol improvements
add module type 'I10' (DIN10V02)

DRS23202 (v13) + DETH02 (v5) :

decode COVALUES10V

v1.18 : 18/11/2009

libdeth : version 3.0.0 release :

- Modify function prototype (safer)
- Add functions deth_get_major_version, deth_get_minor_version and deth_get_micro_version

v1.18.01 : Automatic light protocol improvements
add module type 'DMX' (DMX01) but no action/Info defined (later)

v1.17 : 31/03/2009

libdeth : version 2.0.0 release (function name has changed - "@" removed)

v1.17 : 31/03/2009

v1.17.02 : Automatic light protocol improvements
- add %P (Push) parameter (simulate a push on MODxISM, MODBUx)
- add %DB (Start Dim) and %DE (Stop Dim) params on 'DIM', 'D10', memo dim
- add %I%Dxxx (inc by step) and %O%Dxxx (dec by step) params on 'DIM', 'D10', memo dim and 'AMP'
- add %S (status) parameter for all modules and VAR
- add %K (Clock) parameter for Clock setting

DRS23202 (v11) + DETH02 (v2) :
- add module type 'TPR' (Plage name) and 'TPL' (Plage list)
- add 'P' data type for 'TPL' module type
- add module type 'CLK' (Clocks)
- add 'K' data type for 'CLK' module type

v1.17 : 02/03/2009

add %M (mode) parameter for temp. sensor

v1.17 : 18/11/2008

HELLO command

v1.17 : 27/10/2008

Add information about "Exclusive session"

v1.17 : 11/08/2008 : DRS23202 version 10

MOD_VERSION command

v1.17 : 29/07/2008 : config version v1.17.00

Automatic protocol : T° zones handling
APPINFO command : variables descriptions added

v1.16 : 27/06/2008 : config version v1.16.05

DRS23201 version 5 : can handle all control characters

v1.16 : 13/05/2008 : config version v1.16.03

New memo & sfeer automatic input commands
DRS23201 version 4 : parity handling
DRS23202 : DPBTLCD0x handling + DFAN01 improvements (v9)
Description of APPINFO command + display [house|floor|room] + [memo type]
Extended T° display in light protocol.
DETH01 – DETH02 – DETH03 (available from 1.17.00)
SDK : Explanations of password encoding library.
Ethernet/Internet routers explanation.
T° mode handling on sensors

v1.15 : 04/07/2007 : config version v1.15.00

Changes in shutter automatic input commands (DTRV01, DTRP02 & DTRVBT01)

v1.12 : 05/03/2007 : config version v1.14.00

add of DFAN01, DMR01, DLCD03, DIN10V01 modules
add of APPINFO command
add of %I & %O parameters
DRS23202 version 7

v1.11 : 09/01/2007 : config version v1.13.08

add of DOUT10V02 module
DRS23202 version 6

Previous DRS23202 Versions

1. 09/2005 : First release
2. 10/2005 : -
3. 02/2006 : add DTRVBT01, DOUT10V02
4. 03/2006 : add DTRP02
5. 07/2006 : add of DAMPLI01
6. 09/2006 : add clock transfer : once a minute

2. Informations about DRS2320x / DETH0x / DGSM01 communication interfaces

2.1. General information

The goal of this document is to describe Domintell's RS232 & Ethernet interfaces and to help you to make the good choice between the options available. The hardware does not change but the functions depend on the firmware.
There is several ways to communicate with Domintell system depending of the module :

- Input ASCII strings (sent to Domintell system). need creation of links in configuration software (See chapter "Parameters and specific links->DRS23201 module" in Domintell2 Configuration software manual) is working with DRS23201, DRS23202, DETH02, DUSB01 and DGSM01.
- Output ASCII strings (sent to your device). need creation of links in configuration software (See chapter "Parameters and specific links->DRS23201 module" in Domintell2 Configuration software manual) is working with DRS23201, DUSB01 and DGSM01.
- Output Light Protocol (Domintell system to third-party software) is only available on DRS23202 and DETH02. No configuration/link is required in Domintell2 configuration software; it is automatically generated by master module.
- Input Light Protocol (third-party software to Domintell system) is working with DRS23201, DRS23202, DETH02, DUSB01 and DGSM01. No configuration/link is required in Domintell2 configuration software; it is automatically decoded by master module.

To handle multiple DRS23202 and DETH02 in the same installation, configuration software must be >=1.19.11 and firmware must be >= v15(DRS23202) or v7(DETH02).
Output Light Protocol (Domintell system to third-party software) can only be used on installation with less than 241 modules.

2.2. Devices overview

Here is the list of communication modules and their capabilities :

- DRS23201/DUSB01 : RS232 String exchange interface :
  The goal of this embedded software is to interface devices like an alarm system, a PC, an external sound module, ... through an RS232 port. ASCII strings are exchanged between your device and your Domintell installation. Each text message must be defined in your Domintell application.
  - Input Light Protocol (third-party software to Domintell system);
  - Input ASCII strings (sent to Domintell system).;
  - Output ASCII strings (sent to your device).;
  - input hexadecimal (non-printable) data (third-party software to Domintell system);
  - output hexadecimal (non-printable) data (Domintell system to third-party software).

- DRS23202/DETH02 : RS232/Ethernet Light protocol interface :
  The goal of this embedded software is to give you a real-time status of your Domintell installation through an RS232/ETHERNET port. We advise all PC/system integrators to

use this module. You don't have to treat or produce each text message. It transfers an ASCII text to your device for each status change on your Domintell installation. It also treats programmed text commands in your application and executes automatic commands for an easy bidirectional communication (since version 1.12.01and higher).
  - Input Light Protocol (third-party software to Domintell system);
  - Output Light Protocol (Domintell system to third-party software) – only for installation with less than 241 modules;
  - Input ASCII strings (sent to Domintell system)..

- DRS23203 : RS232 Bang & Olufsen interface. (not covered by this document)

- DETH03 : Ethernet configuration software interface. (not covered by this document)

- DETH04 : Ethernet visual software interface. (not covered by this document) – discontinued

- DGSM01 : String exchange interface using SMS :
  - Input Light Protocol (third-party software to Domintell system);
  - Input ASCII strings (sent to Domintell system).;
  - Output ASCII strings (sent to your device)..

2.3. DRS2320x wiring information

DRS2320x module is designed be connected to a computer using a straight female-male DB9 cable. If you want control a beamer (for example) using a DRS23201, you have to use a null-modem (cross cable) male-male DB9 cable.

Pin 1 : NC
Pin 2 : TX Data Out
Pin 3 : RX Data In
Pin 4 : DSR Signal In (reserved for handshake - not used)
Pin 5 : Ground
Pin 6 : DTR Signal Out (reserved for handshake - not used)
Pin 7, 8 and 9 : NC

For a specific handshake, support@domintell.com.

2.4. Ethernet wiring information

The RJ45 connector must be connected to the LAN (Local Area Network) with a classic UTP RJ45 Cable (CAT5) to a switch or a router.

WARNING :
Do NOT connect Domintell bus on the DETH0x RJ45 connector, this can cause fatal damages to the DETH0x module.

2.5. DRS23201 specific information

- Baudrate selection : 1200, 2400, 4800, 9600, 19200, 38400, 57600.
- 8 data bits.
- Parity selection (since module version 4) : none, even, odd.
- 1 stop bit.

2.6. DRS23202 specific information

- Fixed baudrate : 57600.
- 8 data bits.
- No parity selection.
- 1 stop bit.

2.7. DETH02 specific information

- IP : DHCP or static. It is highly recommended to set a static IP.
- UDP protocol only.
- Default port 17481 (can be changed).
- Possibility to set a password.
- Only one client can connect to DETH02 module at a time

Please, see tutorial below to interface DETH0x modules with your own application.

3. Protocol specifications

3.1. Abreviation of Modules' type

Reference	Mod Type	Description	Possible output data type
DAMPLI01	AMP	Sound Module	S
DBIR01	BIR	8 bipolar relays	O
DDIM01	DIM	8 dimmer commands	D
DDIR01	DIR	IR detector	C
DMV01	DMV	Mechanical ventilation	O
DDMX01	DMX	DMX Module	X
DETH02	ET2	Ethernet Light Protocol module	None (only in APPINFO – version in hexadecimal)
DFAN01	FAN	Fan controler	O for security reasons, valves always follow the setpoint regulation, so if you need to toggle the valves of the DFAN01, you must first change the setpoint on the associated sensor. If valves are OFF, fan will not start. 6th DFAN01 ouput is the working mode : 0 = auto, 1 = manual.
DIN10V01	I10	Analog 0-10V input module	D
DINTDALI01	DAL	DALI interface	D
DISM04	IS4	4 Inputs module	I
DISM08	IS8	8 Inputs module	I
DLCD01	LCD	4*20 char LCD with 2 inputs	I
DLCD03	LC3	Multifunction LCD	I,O,T,U,M,R
DLED01	LED	4 leds driver	O
DMOV01	DET	Infrared detector	I
DMR01	DMR	5 Monopolar relays	O
DOUT10V02	D10	0/1-10V dimmer module	D
DPBC01	CL1	1 Push Button Classic (8 colors and temperature sensor)	I,0,T
DPBC02	CL2	2 Push Button Classic (8	I,0,T

Reference	Mod Type	Description	Possible output data type
		colors and temperature sensor)	
DPBC04	CL4	4 Push Button Classic (8 colors and temperature sensor)	I,0,T
DPBC06	CL6	6 Push Button Classic (8 colors and temperature sensor)	I,0,T
DPBR02	BR2	2 Push Button Rainbow (and RGB)	I,O
DPBR04	BR4	4 Push Button Rainbow (and RGB)	I,O
DPBR06	BR6	6 Push Button Rainbow (and RGB)	I,O
DPB(U/T)01	BU1	1 Push Button	I,O
DPB(U/T)02	BU2	2 Push Button	I,O
DPB(U/T)04	BU4	4 Push Button	I,O
DPB(U/T)06	BU6	6 Push Button	I,O
DPBRLCD0x	PRL	Rainbow LCD push buttons	B,O,T,U,M,R
DPBTLCD0x	PBL	LCD push buttons	B,O,T,U,M,R (T,U,M,R = DPBTLCD02 only)
DRS23202	RS2	Serial Light Protocol module	None (only in APPINFO – version in hexadecimal)
DTEM01	TE1	Temperature sensor	T,U,M,R
DTEM02	TE2	Temperature sensor with 2*16 char LCD	T,U,M,R
DTRP01	TRP	4 teleruptors	O
DTRP02	TPV	2 shutter command with teleruptors Bit 0 Relay 1 = UP Bit 1 Relay 1 = DOWN ...	O (since card's soft version 3)
DTRV01	TRV	4 shutter inverters Bit 0 Relay 1 = UP Bit 1 Relay 1 = DOWN ...	O
DTRVBT01	V24	1 DC shutter command Bit 0 = UP – Bit 1 = DOWN	O (Low voltage TRV – 1 out – available soon)

Reference	Mod Type	Description	Possible output data type
DTSC01/03	TSB	Touchscreen	I,T,U,M,R
DTSC02	LT2	TFT Touchscreen	I,T,U,M,R
DTSC04	LT4	TFT Touchscreen with video	I,T,U,M,R
DTSC35	T35	3,5 TFT Touchscreen	I,T,U,M,R
DVIP01	VI1	1 button videophone	I
DVIP02	VI2	2 buttons videophone	I
ModBus Device	MBD	Ex: Daikin RTD-NET	T,U,M,R,D
Cameras	CAM	Cameras informations	
Clocks	CLK	Programmes clock (normal, reset and astronomical)	K
Radio Station	STA	Radio Station name & frequency	
Software Vars	VAR	Virtual programmed status	O,D,M,R (serial = number in order of appearance on the configuration screen) So you'll be able to create different events.
System Vars	SYS	System status	O (Since v1.12.01 & higher)
Temp. Plage List	TPL	Specific range of a Temp. profile	P
Temp. Profile	TPR	Profile's name which contains next Temp. plage lists received	

3.2. Information about system variables

Code	Name	Data type	Value
SYS000000	Simulation mode	Bool 'O'	0 = Simulation is not playing (only record) 1 = Simulation is playing
SYS000001	Temperature mode	Decimal 'D'	1 = Away 2 = Auto 5 = Comfort 6 = Anti-Freeze/Frost
SYS000002	Regulation mode	Decimal 'D'	0 = Off 1 = Heating

Code	Name	Data type	Value
			2 = Cooling 3 = Heating+Cooling
SYS000003	Daylight Saving Time	Bool 'O'	0 = Automatic summer time switching disabled 1 = Automatic summer time switching enabled
SYS000009	Daytime	Bool 'O'	Based on astronomical clock 0 = Night 1 = Daytime
FRO000001	Global frost mode	Bool 'O'	This variable is only availble in read-only mode via APPINFO. 0 = Forst temperature mode is disabled 1 = Forst temperature mode is enabled

3.3. Input Light Protocol (third-party software to Domintell system)

a) Overview

These commands/strings can be sent to Domintell2 system and are executed without doing any links (Automatic Light Protocol).

b) General recommandations/limitations

- Between 2 RS232 messages : minimum 25 milliseconds OR the reserved character '&'.
- Encapsulate multiple LightProtocol messages (not specific DETH0x command) into an ethernet frame : reserved '&' character.
- You can start all messages with a '&' if needed.
- Maximum 30 characters for a message.
- Important : we advise you to make less than 100 «string» links on the same intput because it's a lot of work for the Central Unit. A WARNING will be displayed into the Diagnose function if there's more than 100 «string» links.
- Light Protocol strings have priority on ASCII (custom) string. If a link is done in Domintell2 configuration software using text "BIR000B4B-1", master unit will decode it as Light Protocol string and will not execute your link.
- Strings '<CR>', '<LF>' and '<TAB>' are replaced by the equivalent ASCII code : 0x0D, 0x0A and 0x09.
- Carryage return & line feed characters are supported at the end of the command line.
- In extended mode (since version 5), control characters can be inserted with '<xx>' where 'xx' is the decimal code. It can be a value between '00' to '31' and must have a length of 2 character.
- Be careful with characters '<CR>' and '<LF>' at the end of the messages.
- Domintell Automatically suppress (trim) the SPACE characters at the begin or at the end of the message.

- Strings are NOT case sensitive. Lower case characters are automatically replaced with upper case equivalent. (Be careful with éèêàñäí...)
- We advise to use only ASCII characters. Accentuated character can be coded over multiple bytes under UTF-8 systems.

c) Action frame format

Mod Type (3 char)	Serial Number (6 char hexadecimal)	- (1 char)	Output Number (1 char)	Action parameters

d) Action parameters

A parameter always start with the character '%' (reserved char)

Char	Means	Description (leading '0' can be replaced by ' ' (space))
'I'	Inputs	LSB = input 0, MSB = input 7
'O'	Outputs	LSB = output 0, MSB = output 7
'D'	Dimmers	2 bytes by output (%) Example : '64' = 100%
'X'	DMX	2 bytes by channel Example : 'C0' = 192
'T'	Temperature Heating setpoint	Example : '20.5 22.0 AUTO 18.0' 1st T° = measure (with software offset) 2nd T° = Heating setpoint value Sensor T° Mode 3rd T° = Heating profile value
'U'	Temperature Cooling setpoint	Example : '20.5 22.0 HEATING 18.0' 1st T° = measure (with software offset) 2nd T° = cooling setpoint value Sensor Regulation Mode 3rd T° = cooling profile value
'C'	Infrared Command	Example : Key 1 = '01'
'S'	Sound	'1-32-TUNE-63-03E8' = Output 1 – 50% - Source Tuner – 99,1000 Mhz (Since card version 5)
'B'	Button	2 bytes(button number) + 2 bytes (00=released 01=pressed)
'P'	Temp. Plage	Example : 12:32:00 21.6 1st = hh:mm:ss 2nd = setpoint value
'K'	Clocks	Example : 00:38:00 7F 00/01/04 Clock 1st = hh:mm:ss 2nd = Day mask (b0=sunday, b1=monday, ... b7= disable clock (=1)) 3rd = Name 4th = Type of clock : blank (normal), SUNSET, SUNRISE, RESET

- '%Dxxx' decimal dimmer/volume value assignment
- '%DB' and '%DE' : execute a Start/Stop dim on a dimmer output

- '%I%Dxxx' and '%O%Dxxx' Increase and Decrease dimmer/volume value by step of decimal 'xxx' percent
- '%Txx.x' decimal T° value (set Heating setpoint)
- '%Uxx.x' decimal T° value (set Cooling setpoint)
- '%Ax' Sound Auxiliary selection 1=>4, Tuner = 5
- '%Fxxx,xxxx'decimal Tuner Frequency in Mhz
- '%I' set the output
- '%O' reset the output
- '%Mx' set Temperature mode (1=absence, 2=auto, 5=confort, 6=gel)
- '%Rx' set Regulation mode (0=off, 1=heating, 2=cooling, 3=mixed)
- '%H' shutter goes High
- '%L' shutter goes Low
- '%S' ask status of module (does not work with MEMO)
- '%Px' simulate a push on an input (1=Begin short push, 2=End short push, 3=Begin long push, 4=End long push)

e) Samples of strings sent to your Domintell installation

Text	Means
BU1 11-1	Change/toggle output/led 1 on module DPBU01 with serial number 0x000011
BU1 11-1%I	Set (ON) output/led 1 on module DPBU01 with serial number 0x000011
BU1 11-1%0	Reset (OFF) output/led 1 on module DPBU01 with serial number 0x000011
BU1 11%S	Get Status of input (button) and output (LED's) on module DPBU01 with serial number 0x000011
BU2 52-2	Change/toggle output/led 2 on module DPBU02 with serial number 0x000052
BU4 4F-4&BU6 8A-6	Change/toggle output 4 on module DPBU04 with serial number 0x00004F and Change/toggle output 6 on module DPBU06 with serial number 0x00008A
BU2 52-2%P1	Simulate Begin of short push on button 2 of module DPBU02 with serial number 0x000052
BU6 134-1%P2	Simulate End of short push on button 1 of module DPBU06 with serial number 0x000134
IS4 CD-4%P3	Simulate Begin of long push on input 4 of module DISM04 with serial number 0x0000CD
IS8 2D8-7%P4	Simulate End of long push on input 7 of module DISM08 with serial number 0x0002D8
BIR 3A6-8	Change output 8 on module DBIR01 with serial number 0x0003A6
TRV 73-1 or TRV 73-2	Run shutter function of shutter 1 on module DTRV01 with serial number 0x000073. Each time the command is send one step of the following cycle is run : UP-STOP-DOWN-STOP-UP-…
TRV 73-1%H or TRV 73-1%I or TRV 73-2%H	Shutter 1 on module DTRV01 with serial number 0x000073 goes High. Returned status will be "TRV 73O01" if not other shutter is ON. (since v1.19.17)
TRV 73-1%L or	Shutter 1 on module DTRV01 with serial number

TRV 73-2%L or TRV 73-2%I	0x000073 goes Low. Returned status will be "TRV 73O02" if not other shutter is ON. (since v1.19.17)
TRV 73-1%O or TRV 73-2%O	Stop shutter 1 on module DTRV01 with serial number 0x000073
TRV 73-3 or TRV 73-4	Run shutter function of shutter 2 on module DTRV01 with serial number 0x000073. Each time the command is send one step of the following cycle is run : UP-STOP-DOWN-STOP-UP-…
TRV 73-3%H or TRV 73-3%I or TRV 73-4%H	Shutter 2 on module DTRV01 with serial number 0x000073 goes High. Returned status will be "TRV 73O04" if not other shutter is ON. (since v1.19.17)
TRV 73-3%L or TRV 73-4%L or TRV 73-4%I	Shutter 2 on module DTRV01 with serial number 0x000073 goes Low. Returned status will be "TRV 73O08" if not other shutter is ON. (since v1.19.17)
TRV 73-3%O or TRV 73-4%O	Stop shutter 2 on module DTRV01 with serial number 0x000073
TRV 73-5 or TRV 73-6	Run shutter function of shutter 3 on module DTRV01 with serial number 0x000073. Each time the command is send one step of the following cycle is run : UP-STOP-DOWN-STOP-UP-…
TRV 73-5%H or TRV 73-5%I or TRV 73-6%H	Shutter 3 on module DTRV01 with serial number 0x000073 goes High. Returned status will be "TRV 73O10" if not other shutter is ON. (since v1.19.17)
TRV 73-5%L or TRV 73-6%L or TRV 73-6%I	Shutter 3 on module DTRV01 with serial number 0x000073 goes Low. Returned status will be "TRV 73O20" if not other shutter is ON. (since v1.19.17)
TRV 73-5%O or TRV 73-6%O	Stop shutter 3 on module DTRV01 with serial number 0x000073
TRV 73-7 or TRV 73-8	Run shutter function of shutter 4 on module DTRV01 with serial number 0x000073. Each time the command is send one step of the following cycle is run : UP-STOP-DOWN-STOP-UP-…
TRV 73-7%H or TRV 73-7%I or TRV 73-8%H	Shutter 4 on module DTRV01 with serial number 0x000073 goes High. Returned status will be "TRV 73O40" if not other shutter is ON. (since v1.19.17)
TRV 73-7%L or TRV 73-8%L or TRV 73-8%I	Shutter 4 on module DTRV01 with serial number 0x000073 goes Low. Returned status will be "TRV 73O80" if not other shutter is ON. (since v1.19.17)
TRV 73-7%O or TRV 73-8%O	Stop shutter 4 on module DTRV01 with serial number 0x000073
TRP 151-4	Change output 4 on module DPBU06 with serial number 0x00008A

DIM	19F-8	Change output 8 on module DDIM01 with serial number 0x00019F
DIM	19F-6%D50	Set output 6 to 50% on module DDIM01 with serial number 0x00019F
DIM	19F-6%DB	Start dimming on output 6 on module DDIM01 with serial number 0x00019F (v1.17.02)
DIM	19F-6%DE	Stop dimming on output 6 on module DDIM01 with serial number 0x00019F (v1.17.02)
DIM	19F-6%I%D10	Increase by step of 10% the value on output 6 on module DDIM01 with serial number 0x00019F (stop at 100%) (v1.17.02)
DIM	19F-6%O%D7	Decrease by step of 7% the value on output 6 on module DDIM01 with serial number 0x00019F (stop at 0%) (v1.17.02)
LED	C2-1	Change output 1 on module DLED01 with serial number 0x0000C2
VAR	1	Change variable 1
SYS	1	Change system variable 1, inc T° mode
SYS	1%S	Get status of system variable 1
SYS	1%M2	Set system T° mode to AUTO
SYS	2%R1	Set system Regulation mode to HEATING
SYS	2%D00	Set Regulation mode to OFF
SYS	2%D01	Set Regulation mode to Heating
SYS	2%D2	Set Regulation mode to Cooling
SYS	2%D03	Set Regulation mode to Mixed
TPV	3-1	Change shutter 1 on module DTRP02 with serial number 0x000003
D10	1-1	Change output 1 on module DOUT10V02 with serial number 0x000001
D10	1-1%D60	Set output 1 to 60% on module DOUT10V02 with serial number 0x000001
D10	1-1%I%D5	Increase output value of module DOUT10V02 with serial number 0x000001 by step of 5% (v1.17.02)
D10	1-1%O%D11	Decrease output value of module DOUT10V02 with serial number 0x000001 by step of 11% (v1.17.02)
DMX	1F-2-1%X230	Set channel 1 of device 2 to value 230 of module DDMX01 with serial number 0x00001F
V24	1-1	Change shutter 1 on module DTRVBT01 with serial number 0x000001
TSB	8D%T24.5	Set Heating T° to 24,5°C on module DTSC01/03 with serial number 0x00008D
LT2	34%T22.7	Set Heating T° to 22,7°C on module DTSC02 with serial number 0x000034
LT4	2F%U21.5	Set Cooling T° to 21,5°C on module DTSC04 with serial number 0x00002F
T35	12%U24.5	Set Cooling T° to 24,5°C on module DTSC35 with serial number 18
TE2	A%M1	Set T° Mode to Absence on module DTEM02 with serial number 10
TE2	A%R2	Set Regulation Mode to Cooling on module DTEM02

	with serial number 10
I10 5%S	Ask Status of the input of DIN10V with serial number 0x000005
AMP 3-1%D50%A1	Output 1 to Aux 1 at Volume 50 on module DAMPLI01 with serial number 0x000003
AMP 3-1%I%D15	Increase volume of Output 1 by step of 15% on module DAMPLI01 with serial number 0x000003 (v1.17.02)
AMP 3-1%O%D9	Decrease volume of Output 1 by step of 9% on module DAMPLI01 with serial number 0x000003 (v1.17.02)
AMP 3-2%D60%F99.1%A5	Output 2 to Tuner at Volume 60 & Freq 99,1MHz on module DAMPLI01 with serial number 0x000003
AMP000003-4	Change output 4 volume on module DAMPLI01 with serial number 0x000003
AMP000003%S	Ask status of all output of module DAMPLI01 with serial number 0x000003
BIR 3A6-6%I	Set output 6 on module DBIR01 with serial number 0x0003A6
BIR 3A6-6%O	Reset output 6 on module DBIR01 with serial number 0x0003A6
MEM000001%I	SET Mixed Memo 1 (v1.16.02)
MEM000001%O	RESET Mixed Memo 1 (v1.16.02)
MEM000002%D50	SET 50% to Dimmer Memo 2 (v1.16.03)
MEM000002%I%D5	Increase value of Dimmer Memo 2 by step of 5% (v1.17.02)
MEM000002%O%D17	Decrease value of Dimmer Memo 2 by step of 17% (v1.17.02)
MEM 3%O	Shutter Memo Group : OFF
MEM 3%H	Shutter Memo Group : UP (High)
MEM 3%L	Shutter Memo Group : Down (Low))
SFE000001	SET Sfeer 1 (v1.16.03)
SFE000001%I	SET Sfeer 1 (v1.16.03)
SFE000001%S	Get status of each item in the Sfeer 1 (v1.17.02)
PBL C-6%I	SET DPBTLCD0x 6th output
PBL C-1%O	RESET DPBTLCD0x 1st output
PBL C-1%P2	Simulate begin of short push on button 1 of module DPBTLCD0x with serial number 0x00000C (v1.17.02)
PBL 13%S	Return status (Temp -> only for DPBTLCD02) of module DPBTLCD02 with serial number 0x000013 (v1.17.02)
FAN000001-1%I	Set speed 1
FAN000001-2%I	Set speed 2
FAN000001-3%I	Set speed 3
FAN000001-4%I	Set Heating (if speed different of 0) Advise : change T° sensor setpoint!
FAN000001-5%I	Set Cooling (if speed different of 0) Advise : change T° sensor setpoint!

FAN000001-6%I	Set Manual mode
FAN000001-6%O	Set Automatic mode
DMV00001-1%I	Set speed 1
DMV00001-2%I	Set speed 2
DMV00001-3%I	Set speed 3
DMV00001-4%I	Set Auxiliary 1
DMV00001-5%I	Set Auxiliary 2
ZON000001%I	T° Zone 1, increment setpoint. (T° zones since v1.17.00)
ZON000001%O	T° Zone 1, decrement setpoint.
ZON000001%T15.5	T° Zone 1, setpoint to 15.5°C.
ZON000001%M1	T° Zone 1, set T° mode to absence.
ZON000001%M2	T° Zone 1, set T° mode to automatic.
ZON000001%M5	T° Zone 1, set T° mode to comfort.
ZON000001%M6	T° Zone 1, set T° mode to frost (if frost mode enabled).
CLK000001%K00:22:00 7F 00/05/09	Set Clock 1 at 00h22m00s for all weekdays during month of may (v1.17.02)
CLK000001%K00:22:00 FF 00/05/09	Disable Clock 1 and set datas to 00h22m00s for all weekdays during month of may (v1.17.02)
CLK000001%K01:22:00 08 00/00/00	Set Clock 1 at 01h22m00s each Wednesday (v1.17.02)
DAL 10-32%D100	DINTDALI01 #0x10 output 0x32 request @ 100%
PRL C-6%I	SET DPBRLCD02 6th output
PRL C-1%O	RESET DPBRLCD02 1st output
PRL C-1%P2	Simulate begin of short push on button 1 of module DPBRLCD02 with serial number 0x00000C (v1.27.01)
PRL 13%S	Return status of module DPBRLCD02 with serial number 0x000013 (v1.27.01)

3.4. Output Light Protocol (Domintell system to third-party software)

a) Status Frame description

Mod Type (3 char)	Serial Number (6 char hexadecimal)	(optional) IO number (-x : minus char + IO number in 1 hexa digit) DINTDALI requires 2 hexa digit	Data Type (1 char)	Datas (n * 2 char hexa)

b) Data Types

Char	Means	Description (leading '0' can be replaced by ' ' (space))
'I'	Inputs	LSB = input 0, MSB = input 7
'O'	Outputs	LSB = output 0, MSB = output 7
'D'	Dimmers	2 bytes by output (%) Example : '64' = 100%
'X'	DMX	2 bytes by channel Example : 'C0' = 192
'T'	Temperature Heating setpoint	Example : '20.5 22.0 AUTO 18.0' 1st T° = measure (with software offset) 2nd T° = Heating setpoint value Sensor T° Mode 3rd T° = Heating profile value
'U'	Temperature Cooling setpoint	Example : '20.5 22.0 HEATING 18.0' 1st T° = measure (with software offset) 2nd T° = cooling setpoint value Sensor Regulation Mode 3rd T° = cooling profile value
'C'	Infrared Command	Example : Key 1 = '01'
'S'	Sound	'1-32-TUNE-63-03E8' = Output 1 – 50% - Source Tuner – 99,1000 Mhz (Since card version 5)
'B'	Button	2 bytes(button number) + 2 bytes (00=released 01=pressed)
'P'	Temp. Plage	Example : 12:32:00 21.6 1st = hh:mm:ss 2nd = setpoint value
'K'	Clocks	Example : 00:38:00 7F 00/01/04 Clock 1st = hh:mm:ss 2nd = Day mask (b0=sunday, b1=monday, ... b7= disable clock (=1)) 3rd = Name 4th = Type of clock : blank (normal), SUNSET, SUNRISE, RESET

c) Sample of received strings from your Domintell installation

All strings

Text	Means
PONG	answer from DRS23202/DETH02 after a string "PING"

MOD_VERSION=SER_V0A	answer from DRS23202 after a string "MOD_VERSION" (hexa)
MOD_VERSION=ETH_V01_STK_V01	answer from DETH02 after a string "MOD_VERSION" (hexa)
TE1 6CT25.2 21.0 AUTO 19.5	Heating T° infos of DTEM01 with serial number 0x6C
TE1 6CU25.2 21.0 HEATING 19.5	Cooling T° infos of DTEM01 with serial number 0x6C
TE2 58T20.9 21.0 COMFORT 21.0	Heating T° infos of DTEM02 with serial number 0x58
TE2 58U20.9 28.0 MIXED 28.0	Cooling T° infos of DTEM02 with serial number 0x58
BU1 11O00	Outputs OFF on module DPBU01 with serial number 0x000011
BU2 52O01	led 1 ON on module DPBU02 with serial number 0x000052
BU4 4FO00	Outputs OFF on module DPBU04 with serial number 0x00004F
BU6 8AO00	Outputs OFF on module DPBU06 with serial number 0x00008A
BIR 3A6O00	Outputs OFF on module DBIR01 with serial number 0x0003A6
TRV 73O00	Outputs OFF on module DTRV01 with serial number 0x000073
TRP 151O00	Outputs OFF on module DTRP01 with serial number 0x000151
DIM 19FD 064 0 0 0 0 0 0	Dim 2 = 100% on module DDIM01 with serial number 0x00019F
LED C2O00	Outputs OFF on module DLED01 with serial number 0x0000C2
IS4 7I00	Inputs OFF on module DISM04 with serial number 0x000007
IS8 4F8I10	Key 5 ON on module DISM08 with serial number 0x0004F8
BU1 11I00	Buttons released on module DPBU01 with serial number 0x000011
BU2 52I00	Buttons released on module DPBU02 with serial number 0x000052
BU4 4FI00	Buttons released on module DPBU04 with serial number 0x00004F
BU6 8AI10	Button 5 pressed on module DPBU06 with serial number 0x00008A
BR2 10I00	Buttons released on module DPBR02 with serial number 0x000010
BR4 4FI02	Button 2 pressed on module DPBR04 with serial number 0x00004F
BR6 30O10	Led Output 5 ON on module DPBR06 with serial number 0x000030
B81 11I01	Button 1 pressed on module DPBL01 with serial number 0x000011
B82 52I00	Buttons released on module DPBL02 with serial

	number 0x000052
B84 4FI00	Buttons released on module DPBL04 with serial number 0x00004F
B86 8AI00	Buttons released on module DPBL06 with serial number 0x00008A
VI1 1I01	Button pressed on DVIP01 with serial number 0x000001
VI2 3I02	Button 2 pressed on DVIP01 with serial number 0x000003
LCD 25I00	Inputs OFF on module DLCD01 with serial number 0x000025
VAR 1O01	Variable 1 True
VAR000001O00	Variable 1 False
VAR 1D64	Variable 1 100%
SYS 2O01	System Variable 2 has value 1
TPV 3O01	shutter 1 : UP on module DTRP02 with serial number 0x000003
D10 1D32	50% on module DOUT10V02 with serial number 0x000001
V24 1O01	shutter 1 : UP on module DTRVBT01 with serial number 0x000001
PBL CO00	Outputs OFF on module DPBTLCD0x with serial number 0x00000C
PBL CT24.0 18.0 AUTO 12.0	Temperature on module DPBTLCD02 with serial number 0x00000C
PBL CB0101	Push Button 1 on DPBTLCD with serial number 0x00000C
PBL CB0100	Release Button 1 on DPBTLCD with serial number 0x00000C
PBL CO00	DPBLCD0xwith serial number 0x00000C outputs are OFF
PBL CO02	2nd DPBLCD0xwith serial number 0x00000C output is ON
PRL CO00	Outputs OFF on module DPBRLCD0x with serial number 0x00000C
PRL CT24.0 18.0 AUTO 12.0	Temperature on module DPBRLCD02 with serial number 0x00000C
PRL CB0101	Push Button 1 on DPBRLCD02 with serial number 0x00000C
PRL CB0100	Release Button 1 on DPBRLCD02 with serial number 0x00000C
PRL CO00	DPBRLCD02 with serial number 0x00000C outputs are OFF
PRL CO02	2nd DPBRLCD02 with serial number 0x00000C output is ON
AMP 3S1-1D-TUNE-6A-0FA0	Output 1, 29%, Tuner, 106.4000MHz on DAMPLI01 with serial 0x03
AMP 3S3-32-AUX1-64-0000	Output 3, 50%, Aux 1, 100.0000MHz on DAMPLI01 with serial 0x03
FAN000001O20	DFAN01 module with serial number 0x000001 is OFF,

	manual mode
FAN000001O11	DFAN01 with serial number 0x01 is cooling @ speed 1, auto mode
FAN00000100C	DFAN01 with serial number 0x01 is heating @ speed 3, auto mode
FAN000001O32	DFAN01 with serial number 0x01 is cooling @ speed 2, manual mode
DMV000001O01	DMV01 with serial number 0x01 has speed 1 enabled
DMV00000100A	DMV01 with serial number 0x01 has speed 2 and auxiliary 1 output enabled
DMV00000101A	DMV01 with serial number 0x01 has speed 2 and auxiliary 1 and 2 output enabled
DAL 10-08D64	DINTDALI01 #0x10 output 0x08 status @ 100%
I10000005D32	Input = 50% on DIN10V02 with serial number 0x000005
DMX 1F-2-00EB000000000000 DMX 1F-2X00EB000000000000	String with 2nd '-' is obsolete since v11(DETH02) & v16(DRS23202) Device 2 connected to DDMX01 module with serial number 0x00001F has its 2nd channel set to 234
MBD 201T22.7 23.0 AUTO 23.0	Heating T° infos of ModBus Device with serial number 0x201
MBD 201U22.7 26.0 OFF 26.0	Cooling T° infos of ModBus Device with serial number 0x201
MBD 201D 3 2	Device specific values for ModBus Device with serial number 0x201
CLK 2K08:05:00-7F-00/00/00-Clock[SUNRISE]	Clock 2 is an astronomical sunrise clock set (this week) to 8h05m00s all weekdays
TPR 2Range N°2	Profile 2 is named 'Range N°2'
TPL 8P15.5-02:45:00	Setpoint of Range 8 will be 15.5°C from 2h45m00s
STA 1STU BRU[FM=64-1770]	Station 1 « STU BRU » @ FM 100,6000MHz
!! PLEASE UPGRADE DETH02 FIRMWARE	This string means that DETH02 has an incompatible version regarding the current OS version in the Master/DGQG01. This can also occur if status of a new module's type is received by DETH02/DRS23202 and is not handled by its firmware. Bad/missing information can be sent by DETH02 until its firmware is updated.

d) Decoding APPINFO

- Warnings/Errors
  They starts with an exclamation mark ("!") and must be shown to user and ask him to contact Domintell support.
  - !! PLEASE UPGRADE DRS23202 FIRMWARE ≥ 18 !! or !! PLEASE UPGRADE DETH02 FIRMWARE >= 17 !!
    DRS23202/DETH02 needs an update of its firmware to be able to decode information send by master/DGQG01 or new references of modules. Customer's application (i.e. Smartphone App) can still work but some status/commands can not anymore until the firmware is updated.
  - ! PLEASE RESTART MASTER 0x???????? !
    Where ???????? is the serial number of the module that is not in the

module table of the DRS23202/DETH02 module. The DRS23202/DETH02 module was not connected to the bus when (1) the application has been sent to master/DGQG01, (2) the master has been restarted and the DRS23202/DETH02 module did not receive the new table. Or The specified module has been added after the bus has been scaned by the master/DGQG01.

- APPINFO line gives information about the DAP/configuration file :
  "`APPINFO (PROG M 1.27 06/02/17 09h19 Rev=6 CP=1252) => Smith_v12706_v7.dap :"`
  - `PROG M 1.27 … Rev=6` : stands for OS version 1.27.6.
  - `CP=1252` (only starting from OS version 1.27.06) : specifies the Windows charset used for non-ASCII accentuated characters. In this case CP1252 (also known as Windows-1252). See Windows code page list on Wikipedia for more information.
  - `Smith_v12706_v7.dap` is the application name (truncated to 32 characters).

- Room/floor information where the input/output/memo/ambiance are located are given just after the name of the item. and will look like `[House|_floor_/_room_]` where `_floor_` and `_room_` are replaced by the real floor and room names (without the underscores "_")

- Some devices has extra type information like DINTDALI (`DAL`) IO's or DDMX01 (`DMX`) IO's just after the room/floor information (`[House|Ground|Living]`)
  - DINTDLAI01 : `[TYPE=xx]` specifies the type of the DALI slave where "`xx`" can be :
    - `TL` : Device Type 0 for fluorescent lamps (IEC 62386-201)
    - `ER` : Device Type 1 for self-contained emergency lighting (IEC 62386-202)
    - `DISC` : Device Type 2 for discharge lamps (IEC 62386-203)
    - `LOWV` : Device Type 3 for low voltage halogen lamps (IEC 62386-204)
    - `INCA` : Device Type 4 for supply Voltage controller for incandescent lamps (IEC 62386-205)
    - `DC` : Device Type 5 for conversion from digital into D.C. voltage (IEC 62386-206)
    - `LED` : Device Type 6 for LED modules (IEC 62386-207)
    - `SW` : Device Type 7 for switching function (IEC 62386-208)
    - `RGB` : Device Type 8 for colour control (IEC 62386-209)
      Please note that all device types can not be handled by DINTDALI01 firmware.

  - DDMX01 output : `[x CHANNELS]` specifies how much channels are configured for this DDMX01 output where "`x`" can be a value between 1 to 8

- The application (APPINFO) is fully retrieved when the string beginning with "`END APPINFO`" is received.

- Example of received strings with APPINFO command :
  `!! PLEASE UPGRADE DRS23202 FIRMWARE >= 24 !!`
  `!! PLEASE UPGRADE DETH02 FIRMWARE >= 25 !!`

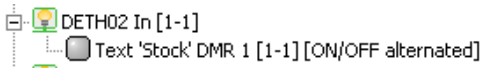
```
APPINFO (PROG M 1.27 04/11/16 09h28 Rev=3) => TEST_APPINFO.dap :
FRO     1 : 1
RS2     2[VERS=0x10]Interface protocole RS[House||]
ET2    B6[VERS=0x0B]MOD DETH02[House||]
BIR   4C9-1BIR 1[House|1st floor|living]
BIR   4C9-2BIR 2[House|1st floor|living]
BIR   4C9-3BIR 3[House|1st floor|kitchen]
BIR   4C9-4BIR 4[House|1st floor|kitchen]
BIR   4C9-5BIR 5[House|2nd floor|]
BIR   4C9-6BIR 6[House||]
BIR   4C9-7BIR 7[House||]
BIR   4C9-8BIR 8[House||]
TRV   3E9-1TRV 1[House||]
TRV   3E9-3TRV 2[House||]
TRV   3E9-5TRV 3[House||]
TRV   3E9-7TRV 4[House||]
DMV     1-1Output DMV01[House||]
DMV     1-1Output DMV01 2[House||]
DMV     1-1Output DMV01 3[House||]
DMV     1-1Auxiliary 1[House||]
DMV     1-1Auxiliary 2[House||]
PBL   E6C-1Input PB 1[House||][NOLINK]
PBL   E6C-2Input PB 2[House||][NOLINK]
PBL   E6C-3Input PB 3[House||][NOLINK]
PBL   E6C-4Input PB 4[House||][NOLINK]
PBL   E6C-7T° sensor DPBTLCD0x[House||]
PBL   E6C-8Led PB 1[House||]
PBL   E6C-9Led PB 2[House||]
PBL   E6C-ALed PB 3[House||]
PBL   E6C-BLed PB 4[House||]
LT4     1-5T° sensor DTSC04[House||]
LT4     1-6IR sensor DTSC04[House||]
LT4     1-BOutput DTSC04 1[House||]
LT4     1-COutput DTSC04 2[House||]
LT4     1-DOutput DTSC04 3[House||]
LT4     1-EOutput DTSC04 4[House||]
LT4     1-15Lock[House||]
BU6   24B-1Input B6 1[House||][PUSH=LONG]
BU6   24B-2Input B6 2[House||][PUSH=LONG]
BU6   24B-3Input B6 3[House||][NOLINK]
BU6   24B-3Input B6 3[House||][NOLINK]
BU6   24B-4Input B6 4[House||][PUSH=SHORT]
BU6   24B-5Input B6 5[House||][PUSH=SHORT]
BU6   24B-6Input B6 6[House||][NOLINK]
BU6   24B-7LED B6 1[House||]
BU6   24B-8LED B6 2[House||]
BU6   24B-9LED B6 3[House||]
BU6   24B-ALED B6 4[House||]
BU6   24B-BLED B6 5[House||]
BU6   24B-CLED B6 6[House||]
DIM   21B-1DIM 1[House||]
DIM   21B-2DIM 2[House||]
DIM   21B-3DIM 3[House||]
DIM   21B-4DIM 4[House||]
DIM   21B-5DIM 5[House||]
DIM   21B-6DIM 6[House||]
DIM   21B-7DIM 7[House||]
DIM   21B-8DIM 8[House||]
TSB   236-5T° sensor Touch[House||]
TSB   236-6IR sensor Touch[House||]
TRP   691-1TRP 1[House||]
TRP   691-2TRP 2[House||]
TRP   691-3TRP 3[House||]
TRP   691-4TRP 4[House||]
```

```
BU2     9-1Input B2 1[House|||][PUSH=SHORT]
BU2     9-2Input B2 2[House|||][NOLINK]
BU2     9-3LED B2 1[House|||]
BU2     9-4LED B2 2[House|||]
TE1   9DE-1T° sensor T1[House|||]
V24     A-1TRV BT[House|||]
I10     5-1Input 0-10V [House|||]
AMP   105-1HP 1[House|||]
AMP   105-2HP 2[House|||]
AMP   105-3HP 3[House|||]
AMP   105-4HP 4[House|||]
FAN   267-1DFAN[House|||]
FAN   268-1DFAN[House|||]
DMR     3-1DMR 1[House|||]
DMR     3-2DMR 2[House|||]
DMR     3-3DMR 3[House|||]
DMR     3-4DMR 4[House|||]
DMR     3-5DMR 5[House|||]
DMX    91-1DMX Output 1 RGBI[House|||][4 CHANNELS]
DMX    91-1-CH1:Chan. R[R 0x00-0xFF]
DMX    91-1-CH2:Label G[G 0x00-0xFF]
DMX    91-1-CH3:Chan. B[B 0x00-0xFF]
DMX    91-1-CH4:Chan. I[I 0x00-0x64]
DMX    91-2DMX Output 2 II[House|||][2 CHANNELS]
DMX    91-2-CH1:Chan. 1[I 0x00-0xFF]
DMX    91-2-CH2:Chan. 2[I 0x00-0xFF]
DMX    91-3DMX Output 3 I[House|||][1 CHANNELS]
DMX    91-3-CH1:Chan. 1[I 0x00-0xFF]
DAL    10-01TL #12345678-1[House|||][TYPE=TL] (!DALI Out number = 2
digits!)
DAL    10-02LED #87654321-2[House|||][TYPE=LED]
DAL    10-03PHASE #87654321-2[House|||][TYPE=INCA]
B81     2-1Button 1[House|Floor|Room]
B82    12-2Button 2[House|||]
B84    36-3Button 3[House|||]
B86    72-4Button 4[House|||]
B86    89-7LED B6 1[House|||]
B84   347-6LED B4 2[House|||]
B82    84-3LED B2 1[House|||]
B81    39-2LED B1 1[House|||]
PRL   E6C-1PBRLCD Input 1[House|||][NOLINK]
PRL   E6C-2PBRLCD Input 2[House|||][NOLINK]
PRL   E6C-3PBRLCD Input 3[House|||][NOLINK]
PRL   E6C-4PBRLCD Input 4[House|||][NOLINK]
PRL   E6C-7PBRLCD T° sensor[House|||]
PRL   E6C-8PBRLCD Led 1[House|||]
PRL   E6C-9PBRLCD Led 2[House|||]
PRL   E6C-APBRLCD Led 3[House|||]
PRL   E6C-BPBRLCD Led 4[House|||]
VAR     1My variable[House|Floor|Room][BOOL]
VAR     2My variable 2[House|Floor|Room][VALU,00->100,LOOP]
SYS     0Presence simulation[House|||][BOOL]
SYS     1T° mode[House|||][VALU,1-2-5-6,LOOP]
SYS     2Regulation mode[House|||][VALU,00->03,LOOP]
SYS     9Day[House|||][BOOL][READONLY]
MEM     1Memo 1[House|||][MIX][REF=BIR   4C9-1]
MEM     2Memo 2[House|||][SHUTTERS][REF=TRV   3E9-1]
MEM     3Memo 3[House|||][DIMMERS][REF=DIM   21B-1]
MEM     4Memo 4[House|||][SOUND][REF=AMP   105-1]
MEM     5Memo 5[House|||][FAN][REF=FAN   267-1]
SFE     1Sfeer 1-Scene 1[House|||]
SFE     2Sfeer 1-Scene 2[House|||]
ZON     1Zone 1[House|||]
CLK     1K00:38:00-7F-04/01/00-Clock
```

```
CLK     2K08:05:00-7F-00/00/00-Clock[SUNRISE]
CLK     3K00:00:00-7F-00/00/00-Clock[RESET]
CLK     4K18:02:00-7F-00/00/00-Clock[SUNSET]
TPR     1Range N°1
TPL     0P12.0-00:00:00
TPL     1P26.5-05:00:00
TPL     2P12.0-07:00:00
TPL     3P 5.0-13:45:00
TPL     4P12.0-15:45:00
TPL     5P20.0-20:15:00
TPL     6P12.0-22:15:00
TPR     2Range N°2
TPL     7P12.0-00:00:00
TPL     8P15.5-02:45:00
TPL     9P12.0-04:45:00
TPL     AP26.0-08:30:00
TPL     BP12.0-10:30:00
TPL     CP30.0-16:30:00
TPL     DP12.0-18:30:00
STA     1STU BRU[FM=64-1770]
STA     2PURE FM[FM=60-1770]
CAM     1Axis Cam01[AXIS][IP=192.168.0.2]
CAM     2Cam DVIP01[DVIP][DHCP][IP=192.168.0.3][JPG=http://192.168.0.3:80/
jpg/image.jpg]
CAM     3Cam
DVIP02[DVIP][IP=192.168.0.4][JPG=http://192.168.0.4:80/jpg/image.jpg]
END APPINFO - Send "HELP" from ETH.
Datasheet @ www.domintell.com => Pro - support@domintell.com
```

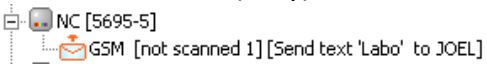
3.5. Input ASCII strings (sent to Domintell system).

You can create «string» links on outputs (dimmer, relay). When this string will be sent to Domintell2 system, the programmed action on the output will be performed.



3.6. Output ASCII strings (sent to your device).

This is only working for DRS23201 and DGSM01 only !
If the correspondent event occurs on the programmed input (like push button, motion detector, water overflow sensor, ...), the text is sent to the module.



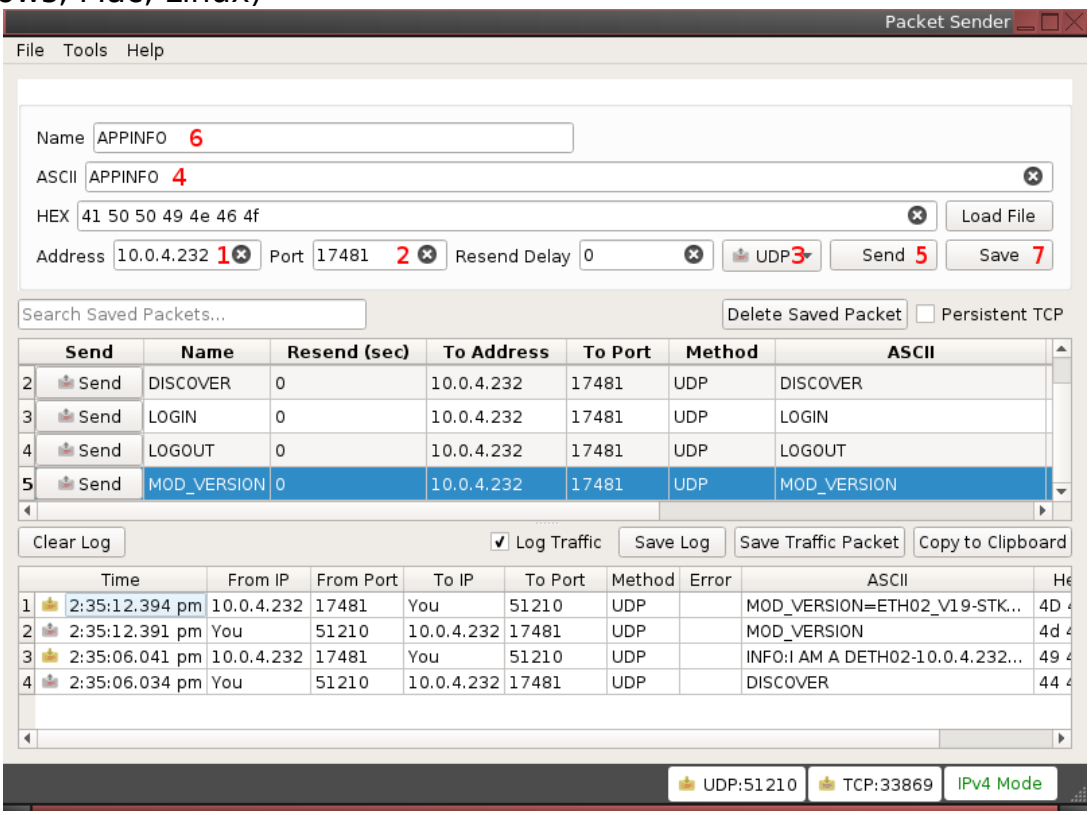
4. How to use DETH02 with your own application

4.1. Tools

Two tools can be used to perform tests below.

a) PacketSender

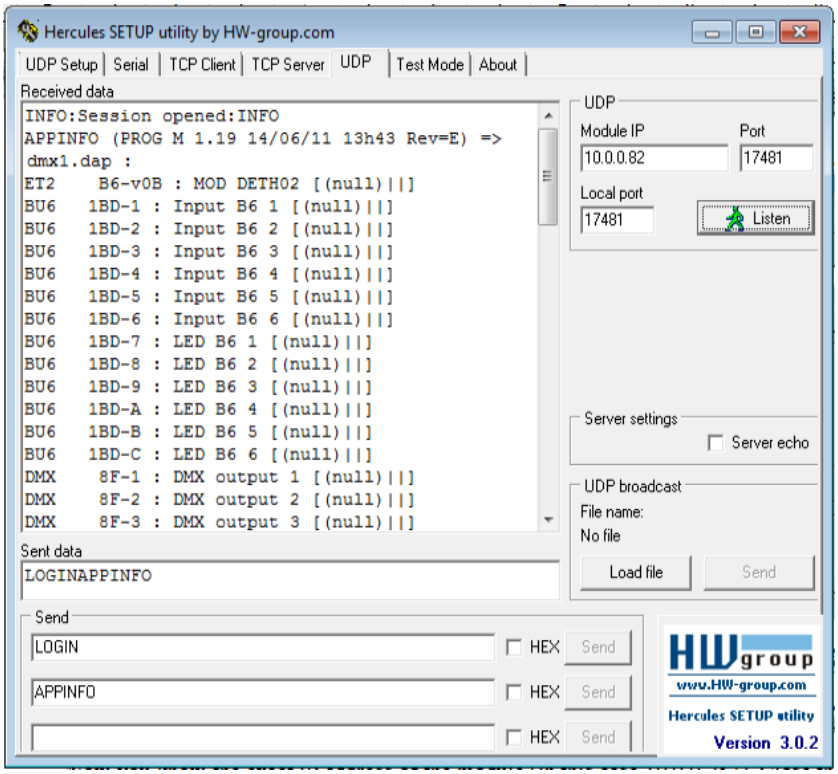
PacketSender (http://www.packetsender.com) : portable multiplatform (Windows, Mac, Linux)



- Put the IP address of DETH02 (from Domintell2 software) in field 1.
- Put the port of DETH02 (from Domintell2 software) in field 2.
- Select UDP protocol in field 3.
- Put the LightProtocol command (LOGIN, APPINFO, ...) you want to send in field 4.
- Click on button 5 to send the command. The sent frame will be logged in bottom area. If the module is correctly configured, you will see the reply at the bottom (starts with yellow icon).
- To save the command, put a name in field 6 and click on button 7. The saved command will appear in the middle area.

b) Hercules

Hercules (http://www.hw-group.com) : light portable application (Windows).



4.2. Initiate communication with DETH02

!! You have to wait at least one reply before sending the next command otherwise new commands will be dropped. Specific DETH0x commands can NOT be concatenated using “&” as it can be done with LightProtocol messages. Only one DETH0x command can be sent by UDP frame. Depending of frame length and bus/network load, reply will be sent from 5ms to 100ms.

'>' means sent to DETH02 and '<' means received from DETH02.

a) Open a session

First check that you a talking to a DETH02

```
> MOD_VERSION
< MOD_VERSION=ETH02_V14-STK_V0F
```

Then open a session (if a password if set please refer to 4.3 Login with Password and send string return by libdeth library).

```
> LOGIN
< INFO:Session opened:INFO
```

b) Download list of modules

```
> APPINFO
< !! PLEASE UPGRADE DRS23202 FIRMWARE >= 18 !!
< APPINFO (PROG M 1.24 16/06/14 09h44 Rev=0) => DOMINT_v12400_v02.dap :
< FRO     1 : 1
< ET2     1[VERS=0x14]MOD DETH02[Maison||]
< …
< END APPINFO - Send "HELP" from ETH.
< Datasheet @ www.domintell.com => Pro - support@domintell.com
```

If red message is also received, you have to inform the customer that the DETH02 module must be updated (by contacting technical support of Domintell) and also inform that some functionnalities may not work correctly.

c) Keep session open

To keep session opened, you have to send one command (or LightProtocol string) to DETH02. The best way is to use HELLO command sent each 50 seconds. PING command should be avoid to keep a session opened as it will generate a lot of trafic on Domintell Bus and takes ressources in Master (DGQG01).

```
> HELLO
< INFO:World:INFO
```

If HELLO command is not received by the DETH02 before its timeout expiration, the following text will be sent:

```
< INFO:Session timeout:INFO
```

d) Refresh statuses

As said above , PING command must be used carefully. Generally, use it after a LOGIN (if your application has already been configured using APPINFO).

```
> PING
< …
```

There is not string/flags to notify end of list of statuses.

e) Close session before exiting the application

If your application is closed or background, it is better to send the LOGOUT command to allow other applications/devices to use DETH02.

```
> LOGOUT
< INFO:Session closed:INFO
```

4.3. Login with Password

The SDK package can be downloaded on the Domintell support website.

!! Please use version 2.0.0 or higher (Binary file in version 2.0.0 is not compatible with version 1.0.0 - even if functions' prototypes have not changed. Sources of your software must be compiled with the new SDK package before using libdeth in version 2).

a) Library installation

- **Linux**

```
$ tar -jxvf libdeth-linux-4.0.0.tar.xz
$ cd  libdeth-linux-4.0.0/linux
$ su -c "./install-lib.sh"
```

This script will copy the library (libdeth-4.0.0.so) in /usr/local/lib, create several symbolic links and run ldconfig. It will also copy libdeth header file (libdeth.h) in /usr/local/include.

Then to compile a program with the library :

```
$ gcc -I/usr/local/include -L/usr/local/lib -ldeth -o myprog myprog.c
```

- **Windows**

* Just copy *libdeth.dll* from win directory to *c:\winnt\system32* or *c:\windows\system32*

* Copy *libdeth.a* to the linker directory of your compiler. If you are using, Code::Blocks, put it in : *C:\Program Files\CodeBlocks\lib*

* Copy *libdeth.h* to the include directory of your compiler. If you are using, Code::Blocks, put it in : *C:\Program Files\CodeBlocks\include*

In Code::Blocks, you have to link your project with the DETH library go to menu "Project->Build Options" and add in linker tab, the file *libdeth.a* (located in *C:\Program Files\CodeBlocks\lib*)

b) Library summary

Here are prototypes of functions available :

```
extern int deth_getplatform(char **destbuffer);
```

Return the platform you are using

```
extern int deth_getlibver(char **destbuffer);
```

Return the library version

```
extern int deth_encryptpsw(char **destbuffer, int *buffsize, const char *password);
```

Encrypt password to store it in destbuffer

c) Function explanation

- deth_getplatform

`int deth_getplatform(char **destbuffer)`	
version	>= 4.0
`destbuffer`	buffer that will contain the returned null-terminated string. The buffer will be allocated by this function. Caller have to free it when done.
returned value	number of bytes written in destbuffer (null-character not incl.). '-1' if error
output example	"Built for Linux"

- deth_getlibver

`int deth_getlibver(char **destbuffer)`	
version	>= 4.0
`destbuffer`	buffer that will contain the returned null-terminated string. The buffer will be allocated by this function. Caller have to free it when done.
returned value	number of bytes written in destbuffer (null-character not incl.). '-1' if error
output example	"libdeth - Version 4.0.1 - 2017/05/17 - CARLIER Gaetan - (c) 2017 Domintell s.a."

- deth_encryptpsw

`int deth_encryptpsw(char **destbuffer, int *buffsize, const char *password)`	
version	>= 4.0
`destbuffer`	buffer that will contain the returned encoded password. The buffer will be allocated by this function. Caller have to free it when done. **!!! destbuffer can contain some null characters. Always use a memcpy function with returned value to manipulate the result stored in destbuffer**
`buffsize`	number of byte that the function has written in destbuffer
`password`	Null-terminated ASCII string to encrypt. Min 4 characters and max 10 characters (null-character not incl.). "LOGIN" will be automatically append.
returned value	number of bytes written in destbuffer (null-character not incl.). '-1' if error
output example	"LOGINÍÏ#ÏÇ`ßÊ\ßÍVÎÏ#ÍÊ"

d) Functions declaration for several programming environment

Example codes are included in SDK package :

- C (Windows and Linux)

```
#ifndef _LIBDETH_H
#define _LIBDETH_H
#include "libdeth_version.h"

//########################################
//#  platform DEPENDANT declaration
//########################################

#if defined(WIN32) || defined(WIN64)

#define OS "Windows"
#ifdef BUILDING_DLL
#define LIBDETH_DLL __stdcall __declspec(dllexport)
#elif STATIC_BUILD
#define LIBDETH_DLL __stdcall
#else
#define LIBDETH_DLL __stdcall __declspec(dllimport)
#endif

#elif defined(linux) || defined(_linux_)

#define OS "Linux"
#define LIBDETH_DLL

#elif defined(__CYGWIN__)

#define LIBDETH_DLL

#endif

//########################################
//#  prototype declaration
//########################################

#ifdef __cplusplus
extern "C" {
#endif
extern int LIBDETH_DLL deth_getplatform(char **destbuffer);
extern int LIBDETH_DLL deth_getlibver(char **destbuffer);
extern int LIBDETH_DLL deth_getmajorver(void);
extern int LIBDETH_DLL deth_getminorver(void);
extern int LIBDETH_DLL deth_getmicrover(void);
extern int LIBDETH_DLL deth_encryptpsw(char **destbuffer, int *buffsize, const char *password);
#ifdef __cplusplus
}
#endif

#endif
```