

Domintell LightProtocol guide for communication interface of new generation (DGQG02,...).

The goal of this document is to describe Domintell's Ethernet interfaces of new generation (DGQG02, DGQG03, DGQG04). 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)

DGQG02, DGQG03, DGQG04 :

Functionalities depend on the firmware. These modules are explained below in details.

For informations about DRS3202, DETH02 or any older LightProtocol interfaces, please consider reading [DS_RS232_ETH_Interfaces_v1_27_08.pdf](#)

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1. Document revisions

v6 : 07/03/2021

Add limit of setpoint for temperature sensor in APPINFO. (Available on DGQG02/04 from O.S. 22.5.0 and DNET02 from O.S. 11.2.0)

```
[LOCAL] [HMR=0x%x - HMT=0x%X] [LHH=%f - LHL=%f - LCH=%f - LCL=%f - ISP=%f]
```

v5 : 27/10/2020

Fix typo in description of "TRP 151-4"

v4 : 21/09/2020

Fix typo for DGQG02 commands with data (command and data must be separated with '|')

Add format of statuses for TypeSensorlo, TypeMovlo, TypeLuxlo, TypeHumiditylo, TypePressurelo, TypeCo2lo

Add example for NewGen statuses

v3 : 26/08/2020

Add DTSC05, DDMX02

Add example for NewGen commands

Add minimal DAP version required to handle modules

Adjust header of APPINFO block

v2 : 24/10/2018

Initial release

2. Informations about communication interfaces

2.1. General information

The goal of this document is to describe Ethernet interfaces of new generation for Domintell2 system 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 (some of these modules are deprecated. There are just named for information):

- Custom 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.
- Custom 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.
- Legacy output LightProtocol (LightProtocol server to LightProtocol client) is only available on DNET01, DGQG02, DGQG03, DGQG04, DRS23202 and DETH02. No configuration/link is required in Domintell2 configuration software; it is automatically generated by master module.
- Legacy Input LightProtocol (LightProtocol client to LightProtocol server) is working with DNET01, DGQG02, DGQG03, DGQG04, DRS23201, DRS23202, DETH02, DUSB01 and DGSM01. No configuration/link is required in Domintell2 configuration software; it is automatically decoded by master module.

This document only covers Ethernet modules of new generation (like DNET01, DGQG02, ...) using Secured Websockets instead of RS232 or UDP socket.

2.2. Devices overview

Here is the list of communication modules and their capabilities :

- DNET01 :
 - IP : DHCP or static. It is highly recommended to set a static IP.
 - Default port 17481.
 - Possibility to set a password.
 - Limited to max 1 legacy UDP (almost backward compatible for application written for DETH02)
 - Limited to max 8 simultaneous connections using Secured WebSocket protocol.
 - Legacy Input LightProtocol (LightProtocol client to LightProtocol server);
 - Custom input ASCII strings (sent to Domintell system).;
 - Legacy output LightProtocol (LightProtocol server to LightProtocol client).
- DGQG02/DGQG03/DGQG04 :
 - Limited to max 2 simultaneous connections using Secured WebSocket protocol.

- Legacy Input LightProtocol (LightProtocol client to LightProtocol server);
- Custom input ASCII strings (sent to Domintell system).;
- Legacy output LightProtocol (LightProtocol server to LightProtocol client).

2.3. 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 RJ45 connector, this can cause fatal damages to the module.

3. Terminology

- Master : Refers to DGQG0x modules.
- Central Unit : Refers to DGQG0x modules.
- Third-party device : device that needs to control Domintell2 installation. This can be a smartphome, a computer, a Raspberry Pi, ...
- LightProtocol server : refer to module on Domintell system that generates APPINFO and statuses. DGQG0x, DNET01 are LightProtocol servers.
- LightProtocol client : refer to third-party application/device that will interact with Domintell system by parsing APPINFO sent by LightProtocol server and sending command to LightProtocol server to control outputs. Smartphone apps like DomintellPilot is a LightProtocol client.
- Input frame : frame sent from LightProtocol client to LightProtocol server

4. Protocol specifications

4.1. Abreviation of Modules' type

Reference	Mod Type	Min. DAP version	Description	Possible output data type
DAMPLI01	AMP	30	Sound Module	S
DBIR01	BIR	30	8 bipolar relays	O
DDIM01	DIM	30	8 dimmer commands	D
DDIR01	DIR	30	IR detector	C
DMV01	DMV	30	Mechanical ventilation	O
DDMX01	DMX	30	DMX Module	X
DDMX02	DX2	33	DMX Module with RGBW handling	Please see 4.5.j IO type list and data format
DENV01	EV1	33	Environment sensor module	Please see 4.5.j IO type list and data format
DENV02	EV2	33	Environment sensor module with CO2 sensor	Please see 4.5.j IO type list and data format
DFAN01	FAN	30	Fan controller	<p>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.</p> <p>6th DFAN01 output is the working mode : 0 = auto, 1 = manual.</p>
DGQG02	QG2	30	New generation Master module with embedded IOs	<i>Please see 4.5.j IO type list and data format</i>

Reference	Mod Type	Min. DAP version	Description	Possible output data type
DGQG03	QG3	n/a	New generation Master module with embedded IOs and DALI® interface	<i>Please see 4.5.j IO type list and data format</i>
DGQG04	QG4	30	New generation Master that replaces DGQG01	<i>None</i>
DIN10V01	I10	30	Analog 0-10V input module	D
DINTDALI01	DAL	30	DALI interface	D
DISM04	IS4	30	4 Inputs module	I
DISM08	IS8	30	8 Inputs module	I
DISM20	I20	30	20 inputs module	I
DLED01	LED	30	4 leds driver	O
DMOV01 DMOV02 DMOV05	DET	30	Infrared detector	I
DMOV06	MV6	33	Motion and light detector	<i>Please see 4.5.j IO type list and data format</i>
DMR01	DMR	30	5 Monopolar relays	O
DOUT10V02	D10	30	0/1-10V dimmer module	D
DPBC01	CL1	30	1 Push Button Classic (8 colors and temperature sensor)	I,O,T
DPBC02	CL2	30	2 Push Button Classic (8 colors and temperature sensor)	I,O,T
DPBC04	CL4	30	4 Push Button Classic (8 colors and temperature sensor)	I,O,T
DPBC06	CL6	30	6 Push Button Classic (8 colors and temperature sensor)	I,O,T
DPBL01	B81	30	1 Push Button Lythos (and 8 colors)	I,O
DPBL02	B82	30	2 Push Button Lythos (and 8 colors)	I,O
DPBL04	B84	30	4 Push Button Lythos (and 8 colors)	I,O
DPBL06	B86	30	6 Push Button Lythos (and 8 colors)	I,O
DPBR02	BR2	30	2 Push Button Rainbow (and	I,O

<u>Reference</u>	<u>Mod Type</u>	<u>Min. DAP version</u>	<u>Description</u>	<u>Possible output data type</u>
			RGB)	
DPBR04	BR4	30	4 Push Button Rainbow (and RGB)	I,0
DPBR06	BR6	30	6 Push Button Rainbow (and RGB)	I,0
DPB(U/T)01	BU1	30	1 Push Button	I,0
DPB(U/T)02	BU2	30	2 Push Button	I,0
DPB(U/T)04	BU4	30	4 Push Button	I,0
DPB(U/T)06	BU6	30	6 Push Button	I,0
DPBRLCD02	PRL	30	Rainbow LCD push buttons	B,0,T,U,M,R
DPBTLCD0x	PBL	30	LCD push buttons	B,0,T,U,M,R (T,U,M,R = DPBTLCD02 only)
DTEM01	TE1	30	Temperature sensor	T,U,M,R
DTRP01	TRP	30	4 teleruptors	0
DTRP02	TPV	30	2 shutter command with teleruptors Bit 0 Relay 1 = UP Bit 1 Relay 1 = DOWN ...	0
DTRV01	TRV	30	4 shutter inverters Bit 0 Relay 1 = UP Bit 1 Relay 1 = DOWN ...	0
DTRVBT01	V24	30	1 DC shutter command Bit 0 = UP – Bit 1 = DOWN	0 (Low voltage TRV – 1 out – available soon)
DTSC02	LT2	30	TFT Touchscreen	I,T,U,M,R
DTSC04	LT4	30	TFT Touchscreen with video	I,T,U,M,R
DTSC05	LT5	33	Rainbow capacitive Touchscreen	Please see 4.5.j IO type list and data format
DVIP01	VI1	30 only	1 button videophone	I
DVIP02	VI2	30 only	2 buttons videophone	I
DWIND01	WI1	33	Wind sensor module	
ModBus Device	MBD	30	Ex: Daikin RTD-NET	T,U,M,R,D
Cameras	CAM	30	Cameras informations	
Clocks	CLK	30	Programmes clock (normal, reset and astronomical)	K

<u>Reference</u>	<u>Mod Type</u>	<u>Min. DAP version</u>	<u>Description</u>	<u>Possible output data type</u>
Radio Station	STA	30	Radio Station name & frequency	
Software Vars	VAR	30	Virtual programmed status	0,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	30	See 4.2 Information about system variables	0 (Since v1.12.01 & higher), 9
Temp. Plage List	TPL	30	Specific range of a Temp. profile	P
Temp. Profile	TPR	30	Profile's name which contains next Temp. plage lists received	

Min. DAP version is given by the following string in APPINFO:
 APPINFO (PROG M 33.0 00/00/00 00h00 Rev=0) => TEST_APPINFO.dap

4.2. Information about system variables

<u>Code</u>	<u>Name</u>	<u>Data type</u>	<u>Value</u>
SYS000000	Simulation mode	Bool '0'	0 = Simulation is not playing (only record) 1 = Simulation is playing
SYS000009	Daytime	Bool '0'	Based on astronomical clock 0 = Night 1 = Daytime

4.3. Legacy Input LightProtocol (*LightProtocol client to LightProtocol server*)

4.3.a) Overview

These commands/strings can be sent to Domintell2 system and are executed without doing any links (Automatic LightProtocol). Please read 4.5.b Modules using new generation input LightProtocol to know which frame format must be used for a given module.

4.3.b) General recommendations/limitations

- Frames **can not** be concatenated anymore using '&'.
- **Important** : we advise you to make less than 100 «string» links on the same input because it's a lot of work for the Master (DGQG0x). A WARNING will be displayed into the Diagnose function if there's more than 100 «string» links.
- LightProtocol 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 LightProtocol string and will not execute your link.
- Strings '<CR>', '<LF>' and '<TAB>' are replaced by the equivalent ASCII code : 0x0D, 0x0A and 0x09.
- Carriage return & line feed characters are supported at the end of the command line.
- 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 accentuated characters like "éèèàñáí"...))
- We advise to use only ASCII characters. Accentuated character can be coded over multiple bytes under UTF-8 systems.

4.3.c) Legacy input frame format

Mod Type (3 char)	Serial Number (6 char hexadecimal)	- (1 char)	Output Number (1 char)	Action parameters
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4.3.d) Legacy 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' 1 st T° = measure (with software offset) 2 nd T° = Heating setpoint value Sensor T° Mode

Char	Means	Description (leading '0' can be replaced by ' ' (space))
		3 rd T° = Heating profile value
U	Temperature Cooling setpoint	Example : '20.5 22.0 HEATING 18.0' 1 st T° = measure (with software offset) 2 nd T° = cooling setpoint value Sensor Regulation Mode 3 rd 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 1 st = hh:mm:ss 2 nd = setpoint value
K	Clocks	Example : 00:38:00 7F 00/01/04 Clock 1 st = hh:mm:ss 2 nd = Day mask (b0=sunday, b1=monday, ... b7=disable clock (=1)) 3 rd = Name 4 th = 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
- '%IDxxx' and '%0%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
- '%0' 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)

4.3.e) Samples of legacy 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	Change/toggle output 4 on module DPBU04 with serial number 0x00004F and
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 73001" if not other shutter is ON. (since v1.19.17)
TRV	73-1%L or TRV 73-2%L or TRV 73-2%I	Shutter 1 on module DTRV01 with serial number 0x000073 goes Low. Returned status will be "TRV 73002" if not other shutter is ON. (since v1.19.17)
TRV	73-1%0 or TRV 73-2%0	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 73004" 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 73008" if not other shutter is ON. (since v1.19.17)
TRV 73-3%0 or TRV 73-4%0	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 73010" 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 73020" if not other shutter is ON. (since v1.19.17)
TRV 73-5%0 or TRV 73-6%0	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 73040" 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 73080" if not other shutter is ON. (since v1.19.17)
TRV 73-7%0 or TRV 73-8%0	Stop shutter 4 on module DTRV01 with serial number 0x000073
TRP 151-4	Change output 4 on module DTRP01 with serial number 0x000151
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%0%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
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%0%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
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%0%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%0	Reset output 6 on module DBIR01 with serial number 0x0003A6
MEM000001%I	SET Mixed Memo 1 (v1.16.02)
MEM000001%0	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%0%D17	Decrease value of Dimmer Memo 2 by step of 17% (v1.17.02)
MEM 3%0	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 6 th output
PBL C-1%0	RESET DPBTLCD0x 1 st 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%0	Set Automatic mode
DMV000001 - 1%I	Set speed 1
DMV000001 - 2%I	Set speed 2
DMV000001 - 3%I	Set speed 3
DMV000001 - 4%I	Set Auxiliary 1
DMV000001 - 5%I	Set Auxiliary 2
ZON0000001%I	T° Zone 1, increment setpoint. (T° zones since v1.17.00)
ZON0000001%0	T° Zone 1, decrement setpoint.
ZON0000001%T15.5	T° Zone 1, setpoint to 15.5°C.
ZON0000001%M1	T° Zone 1, set T° mode to absence.
ZON0000001%M2	T° Zone 1, set T° mode to automatic.
ZON0000001%M5	T° Zone 1, set T° mode to comfort.
ZON0000001%M6	T° Zone 1, set T° mode to frost (if frost mode enabled).
CLK0000001%K00:22:00 7F 00/05/09	Set Clock 1 at 00h22m00s for all weekdays during month of may (v1.17.02)
CLK0000001%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)
CLK0000001%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 6 th output
PRL C - 1%0	RESET DPBRLCD02 1 st 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)

4.4. Legacy output LightProtocol (*LightProtocol server to LightProtocol client*)

4.4.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)
-------------------	------------------------------------	---	--------------------	-------------------------

4.4.b) Data Types

Type	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' 1 st T° = measure (with software offset) 2 nd T° = Heating setpoint value Sensor T° Mode 3 rd T° = Heating profile value
U	Temperature Cooling setpoint	Example : '20.5 22.0 HEATING 18.0' 1 st T° = measure (with software offset) 2 nd T° = cooling setpoint value Sensor Regulation Mode 3 rd 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 1 st = hh:mm:ss 2 nd = setpoint value
K	Clocks	Example : 00:38:00 7F 00/01/04 Clock 1 st = hh:mm:ss 2 nd = Day mask (b0=sunday, b1=monday, ... b7=disable clock (=1)) 3 rd = Name 4 th = Type of clock : blank (normal), SUNSET, SUNRISE, RESET

4.4.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 11000	Outputs OFF on module DPBU01 with serial number 0x000011
BU2 52001	led 1 ON on module DPBU02 with serial number 0x000052
BU4 4F000	Outputs OFF on module DPBU04 with serial number 0x00004F
BU6 8A000	Outputs OFF on module DPBU06 with serial number 0x00008A
BIR 3A6000	Outputs OFF on module DBIR01 with serial number 0x0003A6
TRV 73000	Outputs OFF on module DTRV01 with serial number 0x000073
TRP 151000	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 C2000	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	30010	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	1001	Variable 1 True
VAR	000001000	Variable 1 False
VAR	1D64	Variable 1 100%
SYS	2001	System Variable 2 has value 1
TPV	3001	shutter 1 : UP on module DTRP02 with serial number 0x000003
D10	1D32	50% on module DOUT10V02 with serial number 0x000001
V24	1001	shutter 1 : UP on module DTRVBT01 with serial number 0x000001
PBL	C000	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 C000	DPBLCD0xwith serial number 0x00000C outputs are OFF
PBL C002	2 nd DPBLCD0xwith serial number 0x00000C output is ON
PRL C000	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 C000	DPBRLCD02 with serial number 0x00000C outputs are OFF
PRL C002	2 nd 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
FAN000001020	DFAN01 module with serial number 0x000001 is OFF, manual mode
FAN000001011	DFAN01 with serial number 0x01 is cooling @ speed 1, auto mode
FAN00000100C	DFAN01 with serial number 0x01 is heating @ speed 3, auto mode
FAN000001032	DFAN01 with serial number 0x01 is cooling @ speed 2, manual mode
DMV000001001	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	String with 2 nd '-' is obsolete since v11(DETH02) & v16(DRS23202)
DMX 1F-2X00EB000000000000	Device 2 connected to DDMX01 module with serial number 0x00001F has its 2 nd 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.

4.4.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 scanned by the master/DGQG01.

- APPINFO line gives information about the DAP/configuration file :

```
"APPINFO (PROG M 33.0 00/00/00 00h00 Rev=3 CP=UTF-8) =>
```

Smith_v33_v7.dap :

- PROG M 33.0 ... Rev=0 : stands for DAP file version 33.0.0.
- Date/Hour field is deprecated from version 31.
- CP=UTF-8 (only starting from OS version 1.27.06) : specifies the Windows charset (CP=1252) Unicode charset used for non-ASCII

accentuated characters. CP1252 is also known as Windows-1252. See [Windows code page list on Wikipedia](#) for more information.

- `Smith_v33_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
 - Temperature sensors : `[LOCAL][HMR=0x00-HMT=0x00][LHH=30.0-LHL=10.0-LCH=40.0-LCL=20.0-ISP=0.5]` :
 - `LOCAL` : Deprecated. Only for backward compatibility
 - `HMR` : Hide Mode Regulation. When a bit is set, fonctionnality/capability must be hidden to user. In other words, when a bit is set, user can not request the fonctionnality.
 - 0x01 : If set, user will not be able to turn off regulation
 - 0x02 : If set, user will not be able to request heating regulation
 - 0x04 : If set, user will not be able to request cooling regulation
 - 0x08 : If set user will not be able to request mixed regulation
 - `HMT` : Hide Mode Temperature. When a bit is set, fonctionnality/capability must be hidden to user. In other words, when a bit is set,user can not request the fonctionnality.
 - 0x01 : If set, user will not be able to request automatic temperature mode
 - 0x02 : If set, user will not be able to request comfort temperature mode

- 0x04 : If set, user will not be able to request away temperature mode
 - 0x08 : If set, user will not be able to request frost temperature mode
 - **LHH** : Limit Heating High : High limit for heating setpoint
 - **LHL** : Limit Heating Low : Low limit for heating setpoint
 - **LCH** : Limit Cooling High : High limit for cooling setpoint
 - **LCL** : Limit Cooling Low : Low limit for cooling setpoint
 - **ISP** : Increment SetPoint : Increment step for the setpoint (for example how much setpoint must be increased/decreased when '+' or '-' buttons are pressed)
- 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||]
TE1      1-1Sensor DTEM01[House||][LOCAL][HMR=0x00-HMT=0x00][LHH=30.0-
LHL=10.0-LCH=40.0-LCL=20.0-ISP=0.5]
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      1-10Output DMV01[House||]
DMV      1-10Output DMV01 2[House||]
DMV      1-10Output 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
```

4.5. New generation LightProtocol

4.5.a) Overview

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

All newly released modules will follow the "*new generation input LightProtocol*". This new version is needed to handle these new complex modules that have several types of input and/or output (e.g. DGQG02 has TOR outputs, TRV output, 0-10V output, ...) that can not be handled with the legacy LightProtocol.

Frame generator of LightProtocol server for new generation modules has been completely reviewed to be parsed more easily.

4.5.b) Modules using new generation input LightProtocol

- DGQG02
- DGQG03
- DENV01
- DENV02
- DMOV06
- DWIND01
- DDMX02

4.5.c) General new generation frame format

All numbers are now expressed, by default, **in decimal** (even the serial number). If you want to use hexadecimal notation, you need to prefix value with "0x". So set an output 50% you can use `50` or `0x32`.

`<Module type>/<serial number>/<data frame>`

- `<Module type>` : Module identifier. See 4.1 Abbreviation of Modules' type for more informations.
- `<serial number>` : is expressed in decimal.
- `<data frame>` can contain following special characters:
 - `/` (slash) : field separator.
 - `#` (number sign) : input/output separator.
 - `|` (pipe) : parameter separator.

4.5.d) APPINFO frame format (*LightProtocol server to LightProtocol client*)

This chapter only covers lines generated for new generation modules. Please first read the chapter for the legacy APPINFO (4.4.d Decoding APPINFO).

See 4.5.c General new generation frame format for the start of the frame.

`<Module type>/<serial number>/<IO type>/<IO offset>/<IO name>/<module version>/<house location>/<extra IO informations>`

- `<Module type>` : Module identifier. See 4.1 Abbreviation of Modules' type for more informations.
- `<serial number>` : is expressed in decimal.
- `<IO type>` : can be one of the following given in section 4.5.j IO type list and data format.
- `<IO offset>` : 1-based offset for the given IO type.
- `<IO name>` : name of the IO.

- `<module version>` : Version of the module in dotted decimal string.
- `<house location>` : location in the house. Room/floor are separated by pipes.
- `<extra IO informations>` : For *TypeInputlo(2)* IO type, it will be type of push configured or if there are links associated to this input. See 4.5.k Extra informations in APPINFO.

4.5.e) Example of APPINFO frame

- `QG2/12(/A)/2/1/Hall lights/1.8.0/Ground floor|Hall/0`
 - DGQG02
 - Decimal serial number 12
 - Input IO/Push button (2=TypeInputlo)
 - Input number 1
 - with the name "Hall lights"
 - version of DGQG02 is 1.8.0
 - IO is located in Ground Floor and Hall room
 - No link programmed (0)
- `QG2/12(/A)/2/2/Living lights/1.8.0/Ground floor|Living/2`
 - DGQG02
 - serial number 12
 - (APPINFO Frame)
 - Input IO/Push button (2=TypeInputlo)
 - Input number 2
 - with the name "Living lights"
 - version of DGQG02 is 1.8.0
 - IO is located in Ground Floor and Living room
 - Long and short pushes are enabled (links programmed) (2)
- `LT5/16(/A)/8/1/T° Sensor DTSC05/0.0.0/[House| |]/1|8|30.0|15.5|41.3|22.0|0.5`
 - DTSC05
 - serial number 16
 - (APPINFO Frame)
 - io Type / T° sensor (8=TypeSensorlo)
 - sensor number 1
 - with name sensor DTSC05
 - version (not used)
 - Hide mode off
 - hide mode frost
 - heating setpoint high limit 30.0
 - heating setpoint low limit 15.5
 - cooling setpoint high limit 41.3
 - cooling setpoint low limit 22.0
 - setpoint increment 0.5

4.5.f) Status frame format (LightProtocol server to LightProtocol client)

See 4.5.c General new generation frame format for the start of the frame.

`<Module type>/<serial number>/<IO type>/<IO offset>/<data1>#<data2>#...`

- `<Module type>` : Module identifier. See 4.1 Abreviation of Modules' type for more informations.
- `<serial number>` : is expressed in declmal.

current regulation mode is HEATING,
profile cooling setpoint is 27.0°C

4.5.h) Command frame format (LightProtocol client to LightProtocol server)

See 4.5.c General new generation frame format for the start of the frame.

```
<Module type>/<serial number>/<IO type>/<IO offset>/<cmd1>[|<data1.1>|<data1.2>|...|#<cmd2>[|<data2.1>|...|#...]
```

- **<Module type>** : Module identifier. See 4.1 Abreviation of Modules' type for more informations.
- **<serial number>** : is expressed in declmal.
- **<IO type>** : can be one of the following given in section 4.5.j IO type list and data format.
- **<IO offset>** : 1-based offset for the given IO type.
- **<cmdx>** : Command to perform starting from IO with offset **<IO offset>**. If several commands are provided (separated using the number sign (#)). The format of the data depends on **<IO type>** and **<cmd>**, see section 4.5.j IO type list and data format for more informations.
- **<datax.y>** : argument/extra data associated to the **<cmdx>**. Data are seperated from each others and its related command by a pipe (|). This field is optional.

4.5.i) Example of command frame

- Toggle the 8th relay (TypeTorlo = 1) of DGQG02 s/n 95 :
QG2/95/1/8/1
- Turn on the 1st relay (TypeTorlo = 1) of DGQG02 s/n 95 :
QG2/95/1/1/2
- Turn off the 3rd relay (TypeTorlo = 1) of DGQG02 s/n 95 :
QG2/95/1/3/3
- Set 1st 0-10V output (TypeOut10Vlo = 23) of DGQG02 s/n 95 to 90% :
QG2/95/23/2/5|90
- Move TRV output (TypeTrvlo = 6) of DGQG02 s/n95 up :
QG2/95/6/1/10
- Set 3rd channel (TypeDmxlo = 25) of slave 5 of of DDMX02 s/n 15 to 250 :
DX2/15/25/5/2/71#0x04|0|0|250 (All channels below the highest bit set must be declared in value list (in this case set to 0 but will be ignored by DGQG))

4.5.j) IO type list and data format

Decimal number used to define the category of the IO :

- TypeTorlo (relay) = 1
 - Unit : none
 - Possible status : 0-1
 - Possible command : 1-3
 - 1 = toggle
 - 2 = on
 - 3 = off
- TypeInputlo (push-button input) = 2
 - Unit : none
 - Possible status : 0-4

- 0 = Unknown state
 - 1 = Start of short push (currently pressed)
 - 2 = End of short push (currently released)
 - 3 = Start of long push (currently pressed)
 - 4 = End of long push (currently released)
- Possible command : 1-4
 - 1 = Execute links associated to start of short push
 - 2 = Execute links associated to end of short push
 - 3 = Execute links associated to start of long push
 - 4 = Execute links associated to end of long push
- TypeDimmerlo (dimmer output) = 3
 - Unit : percent (%)
 - Possible status : 0-100
 - Possible command : 1, 2, 3, 5
 - 1 = toggle
 - 2 = on
 - 3 = off
 - 5 = set to value given in <data>.
- TypeTrvlo (shutter output) = 6
 - Unit : none
 - Possible status : 0-5
 - 0 = unknown state = 0
 - 1 = stopped (last moving side unknown)
 - 2 = moving up
 - 3 = moving down
 - 4 = stopped and last move was up
 - 5 = stopped and last move was down
 - Possible command : 3, 10, 11
 - 3 = stop shutter
 - 10 = move shutter up
 - 11 = move shutter down
- TypeSensorlo (Temperature sensor) = 8
 - Unit : celcius degree (°C)
 - Possible status : contains several data seperated by pipe '|' !
 <Meas. Temp> | <Active Heat. SP> | <Temp. Mode>| <Heat Prof. SP> | <Active Cool. SP> | <Regul. Mode> | <Cool Prof. SP>
 For example: 22.1|24.0|AUTO|21.0|25.0|HEATING|27.0
 - Possible command : 1, 2, 3, 5
 - 1 = set heating setpoint
 - <datas> contains value in xx.x
 - 2 = set cooling setpoint
 - <datas> contains value in xx.x
 - 55 = set mode temperature
 - <data = 1> mode absence
 - <data = 2> mode auto
 - <data = 5> mode comfort
 - <data = 6> mode frost
 - 82 = set mode regulation
 - <data = 0> mode off
 - <data = 1> mode heating
 - <data = > mode cooling
 - <data = 3> mode mixed

- TypeOut10Vlo (0-10V output) = 23
 - Unit : percent (%)
 - Possible status : 0-100
 - Possible command : 1, 2, 3, 5
 - 1 = toggle
 - 2 = on
 - 3 = off
 - 5 = set to value given in `<data>`.
- TypeDmxlo (DMX output) = 25
 - Unit : none
 - Channel separator : |
 - Possible status : 0-255
 - Possible command : 1, 2, 3, 71
 - 1 = toggle
 - 2 = on
 - 3 = off
 - 71 = set to value according informations given in `<data>` with `<data> = <mask> | <value1> | <value2> | ...`
 - mask : `value1` is linked to bit 0 of `mask`, `value2` is linked to bit 1 of `mask`, ...
 If highest bit set in mask is the bit 5, you need to provide 6 values even if some bits between bit 5 and bit 0 are null. So if you want to set (virtual) RGB intensity channel and white channel of a RGBW slave to 200 and 100 respectively, data will look like `0x18|0|0|0|100|200`.
 - 0x07: set all RGB channels of RGB, RGBI and RGBW slaves. 3 values are needed. `value1` = Red channel, `value3` = Blue channel. Example : `0x07|100|255|100`.
 - 0x08: set Intensity channel of RGB (virtual) and RGBI. 4 values are needed. `value4` will be used. `value1` to `value3` will be ignored. Example `0x08|0|0|0|255`.
 - 0x10: set (virtual) RGB intensity channel of a RGBW slave. Only `value5` will be used. Example `0x10|0|0|0|0|255`.
- TypeDali (DALI output) = 29
- TypeMovlo (motion detector input) = 34
 - Unit : none
 - Possible status : 0-2
 - 0 = Unknown state
 - 1 = Start of detection (or move in progress)
 - 2 = End of detection (no move detected anymore)
 - Possible command : 1-2
 - 1 = Execute links associated to start of detection
 - 2 = Execute links associated to end of detection
- TypeLuxlo (light sensor input) = 36
 - Unit : lux (lux)
 - Possible status : 0-16.000 (can be higher)
 - Possible command : None
- TypeHumiditylo (humidty sensor input) = 37
 - Unit : percent (% RH)
 - Possible status : 0-100

- Possible command : None
- TypePressureIo (atmospheric pressure sensor input) = 38
 - Unit : hectopascal (hPa)
 - Possible status : 300-1100
 - Possible command : None
- TypeCo2Io (Carbon dioxide sensor input) = 39
 - Unit : parts-per-million (ppm)
 - Possible status : 0-40000
 - Possible command : None

4.5.k) Extra informations in APPINFO

- TypeInputIo (2) : /<type_of_link>
 - <type_of_link>:
 - 0 = No link
 - 1 = Short push only
 - 2 = Short and long push
- TypeSensorIo(8) :
 - /<regul_mask>/<temperature_mask>/<heat_limit_high>/<heat_limit_low>/<cool_limit_high>/<cool_limit_low>/<setpoint_step>
 - <regul_mask> :
 - 0b0001 = hide mode off.
 - 0b0010 = hide mode heating.
 - 0b0100 = hide mode cooling.
 - 0b1000 = hide mode mixed.
 - <regul_temp> :
 - 0b0001 = hide mode auto.
 - 0b0010 = hide mode comfort.
 - 0b0100 = hide mode absence.
 - 0b1000 = hide mode frost.
 - <heat_limit_high> : setpoint limit for heating (with one decimal).
 - <heat_limit_low> : low setpoint limit for heating (with one decimal).
 - <cool_limit_high> : high setpoint limit for cooling (with one decimal).
 - <cool_limit_low> : low setpoint limit for cooling (with one decimal)
 - <inc_step> : setpoint increment (with one decimal).
- TypeDmxIo (25) : /<number_of_channel>|<dmx_type>
 - <number_of_channel> : number of channels defined for this DMX slave/output
 - <dmx_type> : defines the mapping of channels
 - 0 = misconfigured DMX slave/output. Please check configuration in GoldenGate !
 - 1 = RGB : first channel = red, second channel = green, third channel = blue.
 - 2 = RGBI : first channel = red, second channel = green, third channel = blue, fourth channel = intensity.
 - 3 = RGBW : first channel = red, second channel = green, third channel = blue, fourth channel = white
 - 4 = single channel (of any color)

- 5 = multiple channels (of any color)

4.6. Custom input ASCII strings (sent to Domintell system).

Custom texts or frame from external devices/services are not handled.

4.7. Custom output ASCII strings (sent to your device).

Custom texts or frame to external devices/services are not handled.

5. How to use LightProtocol with your own application

5.1. Related modules

This chapter covers New Generation Ethernet modules like DNET01, DGQG02, DGQG03, DGQG04 with control mode (ETH02 emulation) enabled. For old DETH02 module, please read [DS_RS232_ETH_Interfaces_v1_27_08.pdf](#).

5.2. Tools

New generation Ethernet Domintell modules now use Secured WebSocket (wss : data are encrypted in encapsulated frame over HTTP protocol). For now, there is only one out-of-box tool available under Linux : wscat.

5.2.a) wscat

```
$ wscat -n -c wss://<ip>:17481
> connected (press CTRL+C to quit)
< INFO:Waiting for LOGINPSW:INFO
> LOGINPSW@:
< INFO:Session opened:INFO
> APPINFO
< APPINFO (PROG M 30.9 06/02/17 09h19 Rev=13 CP=UTF8) =>
HOUSE_v300912_v2 :
NT1 1[VERS=0x04]Module DNET01[House|]
IS8 5B1-1BP sirène[House|][PUSH=SHORT]
IS8 5B1-2ISM8 2[House|][NOLINK]
IS8 5B1-3ISM8 3[House|][NOLINK]
IS8 5B1-4ISM8 4[House|][NOLINK]
IS8 5B1-5ISM8 5[House|][NOLINK]
IS8 5B1-6ISM8 6[House|][NOLINK]
IS8 5B1-7ISM8 7[House|][NOLINK]
IS8 5B1-8ISM8 8[House|][NOLINK]
END APPINFO
Datasheet @ www.domintell.com => Pro - support@domintell.com
> LOGOUT
< INFO:Closing session:INFO
disconnected
```

5.3. Password handling

Accounts must be first created using GoldenGate !

5.3.a) Password algorithm

The mechanism uses standard encryption algorithm. It uses salted password hashed. This hashed password is itself hashed with nonce generated by the Domintell module at socket creation. SHA-512 is used to hash data.

sha512 sha512(password + salt) + nonce

5.3.b) Glossary

- *hash*: It is the result of a mathematical algorithm that maps data of arbitrary size to a bit string of a fixed size (a hash) and is designed to be a one-way function, that is, a function which is infeasible to invert.
- *SHA-512*: It is a mathematical algorithm that maps data of arbitrary size to a bit string of a fixed size of 64 bytes (a hash) and is designed to be a one-way function, that is, a function which is infeasible to invert.

- *salt*: random data that is used as an additional input to a one-way function that hashes a password or passphrase.
- *nonce*: an arbitrary number that can be used just once in a cryptographic communication.

5.4. Open a session

Depending of the version of the Ethernet module, when WebSocket are used, Welcome message differs and tells which mechanism should be used:

- `INFO:Waiting for LOGINPSW:INFO`
 This is the first generation of login mechanism. There is no handling of user/password and the following command must be sent to open a session: `LOGINPSW@:`
- `INFO:Waiting for LOGINPSW:NONCE=19228322921537008311:INFO`
 This is the last generation of login mechanism that supports user/password. and the following procedure should be used to connect.

Consider we have the registered user "toto" with password "azerty". Here is the procedure to log in:

1. When a Secured WebSocket is opened, A text message is sent by Domintell module:

```
connected (press CTRL+C to quit)
< INFO:Waiting for LOGINPSW:NONCE=9301906811536867321:INFO
```

2. Request the salt associated to the user

```
> REQUESTSALT@toto
<
INFO:REQUESTSALT:USERNAME=toto:NONCE=9301906811536867321:SALT=1007182019:INFO
```

3. You have now all data needed to compute log in token. Salt the password by concatenating password to salt (<password> + <salt>) :

salted password = "azerty1007182019"

4. Hash the salted password :

**SHA512("azerty1007182019") =
 "df6b9fb15cfdbb7527be5a8a6e39f39e572c8ddb943fbc79a943438e9d3d85ebfc2ccf9e0eccd9346026c0b6876e0e01556fe56f135582c05fbdbb505d46755a"**

Pay attention that the hash must be converted into an hexa human readable string before appending the nonce alphanumeric string.

5. Prepend the nonce to the hashed salted password (<hashed salted password> + <nonce>) :

**"df6b9fb15cfdbb7527be5a8a6e39f39e572c8ddb943fbc79a943438e9d3d85ebfc2ccf9e0eccd9346026c0b6876e0e01556fe56f135582c05fbdbb505d46755a" + "9301906811536867321"=
 "df6b9fb15cfdbb7527be5a8a6e39f39e572c8ddb943fbc79a943438e9d3d85ebfc2ccf9e0eccd9346026c0b6876e0e01556fe56f135582c05fbdbb505d46755a9301906811536867321"**

5. Hash the nonce and the hashed salted password:

```
SHA512("9301906811536867321df6b9fb15cfdbb7527be5a8a6e39f39e57
2c8ddb943fbc79a943438e9d3d85ebfc2ccf9e0eccd9346026c0b6876e0e0
1556fe56f135582c05fbb505d46755a") =
"c83b274c82c98965b558762e9f05e5556de17712c9c74ca372eb6452396
3ec729def36c384e7ef8a19a8c7373ac3cc4f10d567bc3b2110fec80c199fc
ea08b01"
```

6. Build LOGINPSW command:

```
>
LOGINPSW@toto:c83b274c82c98965b558762e9f05e5556de17712c9c74ca372eb64
523963ec729def36c384e7ef8a19a8c7373ac3cc4f10d567bc3b2110fec80c199fca
a08b01
< INFO:Session opened:INFO
> LOGOUT
< INFO:Closing session:INFO
disconnected
```

5.4.a) Error messages

- No user/account in database

```
connected (press CTRL+C to quit)
< ERROR:User database empty. Connect first with GoldenGate:ERROR
< INFO:Session timeout:INFO
disconnected
```

This is the default behaviour when the module is connected for the first time on a Domintell installation. No connection is allowed until a user account is created using the configuration software GoldenGate.

- Wrong credentials

This error occurs when username, password or token is invalid.

```
connected (press CTRL+C to quit)
< INFO:Waiting for LOGINPSW:NONCE=8425756741536921788:INFO
>
LOGINPSW@toto:c83b274c82c98965b558762e9f05e5556de17712c9c74ca372eb64
523963ec729def36c384e7ef8a19a8c7373ac3cc4f10d567bc3b2110fec80c199fca
a08b01
< ERROR:Invalid credentials:ERROR
disconnected
```

In this case, the credentials are rejected because the same token generated for account creation is reused while nonce has changed !
 Invalid credentials

- Session not opened

No commands are accepted until a session is opened.

```
connected (press CTRL+C to quit)
< INFO:Waiting for LOGINPSW:NONCE=10671983681536923762:INFO
> PING
< ERROR:Invalid command. Use REQUESTSALT@<username> and
LOGINPSW@<username>:<hashedpsw>:ERROR
disconnected
```

PING has been sent while no session is opened.

5.5. Download list of modules (TODO !)

```
> 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 fonctionnalités may not work correctly.

5.6. Keep session open

To keep session opened, you have to send one command (or LightProtocol string) to LightProtocol server. The best way is to use HELLO command and sent it each 50 seconds. PING command should be avoid to keep a session opened as it will generate a lot of traffic on Domintell Bus and takes ressources in Master (DGQG02/DGQG04/...).

```
> 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
```

A new command has been implemented to disable timeout. Take care that session will be closed only when WebSocket will be closed. In this case, HELLO command is no more needed.

```
> TIMEOUT=0  
< INFO:Timeout disabled. Socket will never be closed unless you send  
LOGOUT or the connection is lost !:INFO
```

5.7. Refresh statuses

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

```
> PING  
< PONG  
< QG2/12/1/1/0#0#0#0#0#0#0#1  
QG2/12/23/1/45#0  
QG2/12/2/1/2#2#2#2#2#2#2#2#2#2#4#2  
QG2/12/6/1/5  
BIR 101F000  
VAR 1000  
VAR 2D02  
SYS 0000  
SYS 9001
```

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

5.8. 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 DGQG02/DGQG04/DNET01/...

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