

Domintell LightProtocol guide for communication interface of new generation (DGQG04, DGQG02, ...).

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

v13 : 17/01/2023

- Fix information about the status (color cycle and malformed frame) for TypeRgbwlo(46) (4.6.l IO type list, status and data format) of DRGBW01 ("RW1")
- The mask in the command 47 for TypeRgbwlo(46) is not correctly processed by LightProtocolServer (DGQG02/DGQG04). An update to version 41.7.1 or newer of application is required (available with GoldenGate 19.12.2 or newer).
- NewGen Commands 1, 2 and 3 on QBaseIoDefs::TypeLedIo (10) do not work for version below 41.7.1 (GoldenGate 19.12.2 or newer is required).
- Add information for the DIN10V02 configured in temperature sensor mode (4.3 I/O mapping of all modules)

v12 : 31/12/2022

- Add handling of video output and gesture input of DTSC05 ("LT5")
- Improve details of commands %F and %A for DAMPLI01 (4.3 I/O mapping of all modules)
- Add commands %I%F, %FN, %O%F, %FP, %I%A, %AN, %O%A, %AP for DAMPLI01 (4.4.d Legacy action/command parameters)
- Fix frame format for DISM20. Number of chars differ depending of the offset (1 char for inputs from 1 to 15 and 2 chars for input from 16 to 20) (4.3 I/O mapping of all modules)
- Add information about status, command and APPINFO for TypeRgbwlo(46) of DRGBW01 ("RW1")
- Add DGQG05 ("QG5")
- Add information about date/time format (4.5.c Sample of received strings from your Domintell installation)

v11 : 05/07/2022

- Add DALI04 ("PS4") and DALI05 ("PS5")

v10 : 20/05/2022

- Add DDIMLV01/DLBxxx ("LV1")
- Add air conditioner device ("ACD") connected to DINTMB02 module.
- Add new hide mode for TypeSensorlo(8) in 4.6.e Extra informations in APPINFO (used by aircomodule)
- Add TypeDmvlo(13) and TypeSwinglo(54) in NewGen LightProtocol in 4.6.e Extra informations in APPINFO and 4.6.l IO type list, status and data format
- Add status command for NewGen LightProtocol (103/0x67)
- Mark status command for group ("MEM") as working with Legacy LightProtocol
- Review typo in 4.3 I/O mapping of all modules

v9 : 28/03/2022

- Format of temperature sensor in NewGen APPINFO (TypeSensorlo(8)) is not correctly documented fields are documented to be separated with "/" while they are separated with "|" (4.6.e Extra informations in APPINFO).
- Since version 40.0 of DAP file, <regul_mask> and <temperature_mask> of temperature sensor in NewGen APPINFO (TypeSensorlo(8)) are still expressed in hexadecimal prefixed with "0x". Before, they were expressed in hexadecimal but without "0x" ! (4.6.e Extra informations in APPINFO)
- Fix incorrectly documented offsets of LED indicator and temperature sensor for command of module DPBL0x, DPBC0x, DPBR0x, DPBT0x, DPBU0x and DTSC0x (4.3 I/O mapping of all modules)
- Add DPBR THERM01 ("RT1")

v8 : 02/03/2022

- Add format of statuses for TypeWindlo(41)

v7 : 10/12/2021

- Review formatting of chapters "I/O mapping of all modules" and "Legacy action/command parameters"

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, DNET02, DGQG02, 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, DNET02, DGQG02, 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 DNET02, DGQG04, 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/DNET02 :
 - 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/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 smartphone, a computer, a Raspberry Pi, ...
- LightProtocol server : refer to module on Domintell system that generates APPINFO and statuses. DGQG0x, DNET0x 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

<u>Reference</u>	<u>Mod d Ty pe</u>	<u>Min. DAP version</u>	<u>Description</u>
DALI04	PS4	40.1	Domintell bus power supply
DALI05	PS5	40.1	Domintell bus
DAMPLI01	AMP	30	Sound Module
DBIR01	BIR	30	8 bipolar relays
DDIM01	DIM	30	8 dimmer commands
DDIR01	DIR	30	IR detector
DMV01	DMV	30	Mechanical ventilation
DDMX01	DMX	30	DMX Module
DDMX02	DX2	33	DMX Module with RGBW handling
DENV01	EV1	33	Environment sensor module
DENV02	EV2	33	Environment sensor module with CO2 sensor
DELEC01	EL1	42	P1 smart metering interface
DFAN01	FAN	30	Fan controler
DGQG02	QG2	30	New generation Master module with embedded IOs
DGQG03	QG3	n/a	New generation Master module with embedded IOs and DALI® interface
DGQG04	QG4	30	New generation Master that replaces DGQG01
DGQG05	QG5	42	New generation Master with 4 relays, 16 inputs and an interface for LightBus
DIN10V01	I10	30	Analog 0-10V input module
DINTDALI01	DAL	30	DALI interface
DINTMB01	MB1	n/a	Deprecated ModBus interface
DINTMB02	MB2	41	ModBus interface (not directly used in LightProtocol)
DISM04	IS4	30	4 Inputs module
DISM08	IS8	30	8 Inputs module
DISM20	I20	30	20 inputs module
DLED01	LED	30	4 leds driver
DMOV01 DMOV02 DMOV05	DET	30	Infrared detector

<u>Reference</u>	<u>Mo d Ty pe</u>	<u>Min. DAP version</u>	<u>Description</u>
DMOV06	MV6	33	Motion and light detector
DMOV07	MV7	39.1	Motion and light detector
DMR01	DMR	30	5 Monopolar relays
DOUT10V02	D10	30	0/1-10V dimmer module
DPBC01	CL1	30	1 Push Button Classic (8 colors and temperature sensor)
DPBC02	CL2	30	2 Push Button Classic (8 colors and temperature sensor)
DPBC04	CL4	30	4 Push Button Classic (8 colors and temperature sensor)
DPBC06	CL6	30	6 Push Button Classic (8 colors and temperature sensor)
DPBL01	B81	30	1 Push Button Lythos (and 8 colors)
DPBL02	B82	30	2 Push Button Lythos (and 8 colors)
DPBL04	B84	30	4 Push Button Lythos (and 8 colors)
DPBL06	B86	30	6 Push Button Lythos (and 8 colors)
DPBR02	BR2	30	2 Push Button Rainbow (and RGB)
DPBR04	BR4	30	4 Push Button Rainbow (and RGB)
DPBR06	BR6	30	6 Push Button Rainbow (and RGB)
DPB(U/T)01	BU1	30	1 Push Button
DPB(U/T)02	BU2	30	2 Push Button
DPB(U/T)04	BU4	30	4 Push Button
DPB(U/T)06	BU6	30	6 Push Button
DPBRLCD02	PRL	30	Rainbow LCD push buttons
DPBR THERM01	RT1	40	Rainbow thermostat
DPBTLCD0x	PBL	30	LCD push buttons
DRGBW01	RW1	38.3	RGBW LED strips controller
DTEM01	TE1	30	Temperature sensor
DTRP01	TRP	30	4 teleruptors
DTRP02	TPV	30	2 shutter command with teleruptors
DTRV01	TRV	30	4 shutter inverters
DTRVBT01	V24	30	1 DC shutter command
DTSC02	LT2	30	TFT Touchscreen
DTSC04	LT4	30	TFT Touchscreen with video
DTSC05	LT5	33	Rainbow capacitive Touchscreen

<u>Reference</u>	<u>Mod Ty pe</u>	<u>Min. DAP version</u>	<u>Description</u>
DVIP01	VI1	30 only	1 button videophone
DVIP02	VI2	30 only	2 buttons videophone
DWIND01	WI1	33	Wind sensor module
Airco device	ACD	41	Air conditioner device (ModBus device connected to DINTMB02 interface)
ModBus device	MBD	30 only	For Daikin RTD-NET (deprecated)
Camera	CAM	30	Cameras informations
Clock	CLK	30	Programmable software clocks (normal, reset and astronomical)
Radio station	STA	30	Radio Station name & frequency
variable	VAR	30	Virtual programmed status
System variable	SYS	30	See 4.2 Information about system variables
Temperature plage list	TPL	30	Specific range of a Temperature profile
Temperature profile	TPR	30	Profile's name which contains next temperature plage lists received

Min. DAP version refers to "PROG M 33.0" from header of APPINFO. See chapter 4.5.d Decoding APPINFO for more informations.

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. I/O mapping of all modules

"(packed)" means that there is one status for all inputs or outputs and statuses of several outputs/inputs are packed in the same byte. The value must be handled using bitwise operators. For example, "BIR000043025" must be handled as $0x20 \mid 0x04 \mid 0x01 = (1 \ll 5) \mid (1 \ll 2) \mid (1 \ll 0)$. So output 6, 3 and 1 are on.

"(global)" means that status of all inputs/outputs is sent on one line (values are concatenated). For example, status of a DDIM01 will look like "DIM000023D640032000000000A" which means that first output is at 100%, third output is at 50% and eighth output is at 10%.

Associated status type are explained in chapter 4.5.b Data Types.

Associated commands are explained in chapter 4.4.d Legacy action/command parameters.

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
DALI04	PS4	/51/1	Bus power supply	Please see 4.6.l IO type list, status and data format	
DALI05	PS5	/51/1	Bus power supply	Please see 4.6.l IO type list, status and data format	
DAMPLI01	AMP	1	1st audio output	-1S	-1 (none) (from v41.3) -1%Fnnn.nn -1%An -1%I%A (from v41.7) -1%O%A (from v41.7) -1%I -1%O -1%Dnnn -1%I%D (see 4.4.d !) -1%O%D (see 4.4.d !) -1%I%F or -1%FN (from v41.7) -1%O%F or -1%FP (from v41.7)
		...	...		...
		4	4th audio output	-4S	-4 (none) (from v41.3) -4%Fnnn.nn

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
					-4%An -4%I%A (from v41.7) -4%0%A (from v41.7) -4%I -4%O -4%Dnnn -4%I%D (see 4.4.d !) -4%0%D (see 4.4.d !) -4%I%F or -4%FN (from v41.7) -4%0%F or -4%FN (from v41.7)
DBIR01	BIR	1	1st relay output	0xx (packed) (global)	-1 (none) -1%I -1%O
		...			...
		8	8th relay output		-8 (none) -8%I -8%O
DDIM01	DIM	1	1st dimmer output	Dxx (global)	-1 -1%I -1%O -1%Dnnn -1%DB -1%DE -1%I%Dnnn (see 4.4.d !) -1%0%Dnnn (see 4.4.d !)
		...			...
		8	8th dimmer output		-8 -8%I -8%O -8%Dnnn

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
					-8%DB -8%DE -8%I%Dnnn (see 4.4.d !) -8%O%Dnnn (see 4.4.d !)
DDIMLV01 (NewGen)	LV1	/42/1	1st dimmer output	Please see 4.6.I IO type list, status and data format	
		/42/2	2nd dimmer output		
		/42/...	Dynamic number of slaves. Depends on config.		
DDIR01	DIR	1	Remote control IR receiver	Cxx	None
DMV01	DMV	1 2 3	3-speed output Index 2 and 3 not given in APPINFO but used in command frame to set speed 2 or 3 using %I	0xx (packed) (global)	-1%I -2%I -3%I -1%0 (from v38.4) -2%0 (from v38.4) -3%0 (from v38.4)
		4	1st aux. relay output		-4 -4%I -4%0
		5	2nd aux. relay output		-5 -5%I -5%0
DDMX01	DMX	1	1st DMX slave	-1Xxx	-1-c -1-c%I

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
					-1 - c%0 -1 - c%Xnnn (c is the canal number)
		...			...
		8	8th DMX slave	-8Xxx	-8 - c -8 - c%I -8 - c%0 -8 - c%Xnnn (c is the canal number)
DDMX02 (NewGen)	DX2	/25/1	1st DMX slave	Please see 4.6.I IO type list, status and data format	
		/25/2	2nd DMX slave		
		...	Dynamic number of slaves. Depends on config.		
DENV01 (NewGen)	EV1	/8/1	Temperature sensor	Please see 4.6.I IO type list, status and data format	
		/36/1	Ambiant luminosity input		
		/37/1	Humidity input		
		/38/1	Atmospheric pressure input		
DENV02 (NewGen)	EV2	/8/1	Temperature sensor	Please see 4.6.I IO type list, status and data format	
		/37/1	Humidity input		
		/39/1	Air quality input		

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
DELEC01	EL1	/24/1	Electricity metering input	Please see 4.6.I IO type list, status and data format	
DFAN01	FAN	1	Output of speed 1	0xx (packed)	DFAN01 is a highly integrated module and it is not recommended to interact with its output using LightProtocol. 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.
		2	Output of speed 2		
		3	Output of speed 3		
		4	Output of cooling valve		
		5	Output of heating valve		
		6	Working mode (virtual output) (deprecated)		0 = auto, 1 = manual.
DGQG02 (NewGen)	QG2	/1/1	1st relay	Please see 4.6.I IO type list, status and data format	
		...			
		/1/8	8th relay		
		/2/1	1st input		
		...			
		/2/12	12th input		

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
		/6/1	Shutter output		
		/23/1	1st 0-10V output		
		/23/2	2nd 0-10V output		
		/40/1	Access control input	None	None
DGQG04 (NewGen)	QG4	None	No IO can be controlled with LightProtocol	None	None
DGQG05 (NewGen)	QG5	/1/1	1st relay	Please see 4.6.I IO type list, status and data format	
		...			
		/1/4	4th relay		
		/2/1	1st input		
		...			
		/2/16	16th input		
		/42/1	1st dimmer output		
		/42/2	2nd dimmer output		
		/42/...	Dynamic number of slaves. Depends on config.		
DIN10V01	I10	1	Analog 0-10V input module	Dxx (for analog mode)	None
				Tnn.n	-1%Tnn.n

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
				Unn.n (for temperature sensor mode)	-1%Unn.n -1%Mn -1%Rn
DINTDALI01	DAL	01	1st DALI salve	-01Dxx	-01 -01%I -01%0 -01%Dnnn
		0A	10th DALI slave	-0ADxx	-0A -0A%I -0A%0 -0A%Dnnn
		...	Dynamic number of slaves. Depends on config. IO index has 2 characters !	...	
		40	64th DALI slave	-40Dxx	-40 -40%I -40%0 -40%Dnnn
DISM04	IS4	1	1st input	Ixx (packed) (global)	-1%Pn
		...	...		...
		4	4th input		-4%Pn
DISM08	IS8	1	1st input	Ixx (packed) (global)	-1%Pn
		...	...		...

<u>Module</u>	<u>Mod Type</u>	APPINFO IO index (1-based) (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
		8	8th input		- 8%Pn
DISM20	I20	1	1st input	Ixxxxxx (packed) (global)	-1%Pn
		2	2nd input		- 2%Pn
		...			...
		F	15th input		- F%Pn
		From offset 16 (0x10), IO index has 2 characters !			
		10	16th input		-10%Pn
		..			...
		14	20th input		- 14%Pn
DLED01	LED	1	1st ouput	0xx (packed) (global)	- 1 -1%I -1%0
		..			...
		4	4th output		- 4 -4%I -4%0
DMOV01 DMOV02 DMOV05	DET	1	Motion detector	Ixx (packed) (global)	-1%P1 -1%P2
DMOV06 (NewGen)	MV6	/34/1	Motion detector	Please see 4.6.I IO type list, status and data format	
		/36/1	Ambiant luminosity		

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
			input		
DMOV07 (NewGen)	MV7	/34/1	Motion detector	Please see 4.6.I IO type list, status and data format	
		/36/1	Ambiant luminosity input		
DMR01	DMR	1	1st relay output	0xx (packed) (global)	-1 -1%I -1%0
		...			...
		5	5th relay output		-5 -5%I -5%0
DOUT10V02	D10	1	1st 0-10V output	Dxx (global)	-1 -1%I -1%0 -1%Dnnn -1%DB -1%DE -1%I%Dnnn (see 4.4.d !) -1%0%Dnnn (see 4.4.d !)
DPBC01	CL1	1	1st push-button	Ixx (packed) (global)	-1%Pn
		2	1st LED indicator	Oxx (packed) (global)	-1 -1%I -1%0
		3	Temperature sensor	Tnn.n Unn.n	-1%Tnn.n -1%Unn.n -1%Mn -1%Rn

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
DPBC02	CL2	1	1st push-button	Ixx (packed) (global)	-1%Pn
		2	2nd push-button		-2%Pn
		3	1st LED indicator	0xx (packed) (global)	-1 -1%I -1%0
		4	2nd LED indicator		-2 -2%I -2%0
		5	Temperature sensor	Tnn.n Unn.n	-1%Tnn.n -1%Unn.n -1%Mn -1%Rn
DPBC04	CL4	1	1st push-button	Ixx (packed) (global)	-1%Pn
		...	...		...
		4	4th push-button		-4%Pn
		5	1st LED indicator	0xx (packed) (global)	-1 -1%I -1%0
		...	...		...
		8	4th LED indicator		-4 -4%I -4%0
		9	Temperature sensor	Tnn.n Unn.n	-1%Tnn.n -1%Unn.n -1%Mnn.n -1%Rnn.n

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
DPBC06	CL6	1	1st push-button	Ixx (packed) (global)	-1%Pn
		...	...		...
		6	6th push-button		-6%Pn
		7	1st LED indicator	0xx (packed) (global)	-1 -1%I -1%0
		...	...		...
		C	6th LED indicator		-6 -6%I -6%0
		D	Temperature sensor		-1%Tn.nn -1%Unn.n -1%Mn -1%Rn
DPBL01	B81	1	1st push-button	Ixx (packed) (global)	-1%Pn
		2	1st LED indicator	0xx (packed) (global)	-1 -1%I -1%0
DPBL02	B82	1	1st push-button	Ixx (packed) (global)	-1%Pn
		2	2nd push-button		-2%Pn
		3	1st LED indicator	0xx (packed) (global)	-1 -1%I -1%0
		4	2nd LED indicator		-2 -2%I

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
					-2%0
DPBL04	B84	1	1st push-button	Ixx (packed) (global)	-1%Pn
		...	...		...
		4	4th push-button		-4%Pn
		5	1st LED indicator	Oxx (packed) (global)	-1 -1%I -1%0
		...	...		...
		8	4th LED indicator		-4 -4%I -4%0
DPBL06	B86	1	1st push-button	Ixx (packed) (global)	-1%Pn
		...	...		...
		6	6th push-button		-6%Pn
		7	1st LED indicator	Oxx (packed) (global)	-1 -1%I -1%0
		...	...		...
		C	6th LED indicator		-6 -6%I -6%0
DPBR02	BR2	1	1st push-button	Ixx (packed) (global)	-1%Pn
		2	2nd push-button		-2%Pn

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO</u> <u>IO index</u> <u>(1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
		3	1st LED indicator	0xx (packed) (global)	-1 -1%I -1%0
		4	2nd LED indicator		-2 -2%I -2%0
DPBR04	BR4	1	1st push-button	Ixx (packed) (global)	-1%Pn
		...	...		...
		4	4th push-button		-4%Pn
		5	1st LED indicator	0xx (packed) (global)	-1 -1%I -1%0
		...	...		...
		8	4th LED indicator		-4 -4%I -4%0
DPBR06	BR6	1	1st push-button	Ixx (packed) (global)	-1%Pn
		...	...		...
		6	6th push-button		-6%Pn
		7	1st LED indicator	0xx (packed) (global)	-1 -1%I -1%0
		...	...		...
		C	6th LED indicator		-6 -6%I

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
					- 6%0
DPB(U/T)01	BU1	1	1st push-button	Ixx (packed) (global)	- 1%Pn
		2	1st LED indicator	Oxx (packed) (global)	- 1 - 1%I - 1%0
DPB(U/T)02	BU2	1	1st push-button	Ixx (packed) (global)	- 1%Pn
		2	2nd push-button		- 2%Pn
		3	1st LED indicator	Oxx (packed) (global)	- 1 - 1%I - 1%0
		4	2nd LED indicator		- 2 - 2%I - 2%0
DPB(U/T)04	BU4	1	1st push-button	Ixx (packed) (global)	- 1%Pn
		...		...	...
		4	4th push-button		- 4%Pn
		5	1st LED indicator	Oxx (packed) (global)	- 1 - 1%I - 1%0
		...			...
		8	4th LED indicator		- 4 - 4%I - 4%0

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
DPB(U/T)06	BU6	1	1st push-button	Ixx (packed) (global)	-1%Pn
		...	...		...
		6	6th push-button		-6%Pn
		7	1st LED indicator	Oxx (packed) (global)	-1 -1%I -1%0
		...	...		...
		C	6th LED indicator		-6 -6%I -6%0
DPBRLCD02	PRL	1	1st push-button	Ixx (packed) (global)	-1%Pn
		...	(inputs may be hidden/missing depending of configuration)		...
		6	6th push-button		-6%Pn
		7	Temperature sensor	Tnn.n Unn.n	-1%Tnn.n -1%Unn.n -1%Mn -1%Rn
		8	1st LED indicator	Oxx (packed) (global)	-1 -1%I -1%0
		...	(outputs may be hidden/missing depending of configuration)		...

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
		D	6th LED indicator		-6 -6%I -6%0
DPBRTherm01	RT1	/8/1	Temperature sensor	Please see 4.6.I IO type list, status and data format	
DPBTLCD0x	PBL	1	1st push-button	Ixx (packed) (global)	-1%Pn
		... (inputs may be hidden/missing depending of configuration)			...
		6	6th push-button		-6%Pn
		7	Temperature sensor (hidden for DPBRLCD01)	Tnn.n Unn.n	-1%Tnn.n -1%Unn.n -1%Mn -1%Rn
		8	1st LED indicator	Oxx (packed) (global)	-1 -1%I -1%0
		... (outputs may be hidden/missing depending of configuration)			...
		D	6th LED indicator		-6 -6%I -6%0
DRGBW01 (RGBW mode)	RW1	/46/1	RGBW output	Please see TypeRgbwlo(46) in 4.6.I IO type list, status and data format	

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
DRGBW01 (4 channels dimmer)	RW1	/3/1	1st simple dimmer output	Please see TypeDimmerIo(3) in 4.6.I IO type list, status and data format	
		/3/2	2nd simple dimmer output		
		/3/3	3rd simple dimmer output		
		/3/4	4th simple dimmer output		
DTEM01	TE1	1	Temperature sensor	Tnn.n Unn.n	-1%Tnn.n -1%Unn.n -1%Mn -1%Rn
DTRP01	TRP	1	1st relay output	0xx (packed) (global)	-1 -1%I -1%0
		...			...
		4	4th relay output		-4 -4%I -4%0
DTRP02	TPV	1	1st shutter up	0xx (packed) (global)	-1%L -1%H -1%I -1%0 => -2%0
		2	1st shutter down (hidden in APPINFO)		-2%H -2%L -2%I -2%0 => -1%0

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
		3	2nd shutter up		-3%L -3%H -3%I -3%0 => -3%0
		4	2nd shutter down (hidden in APPINFO)		-4%H -4%L -4%I -4%0 => -3%0
DTRV01	TRV	1	1st shutter up	0xx (packed) (global)	-1%L -1%H -1%I -1%0 => -2%0
		2	1st shutter down (hidden in APPINFO)		-2%H -2%L -2%I -2%0 => -1%0
		...			...
		7	4th shutter up		-7%L -7%H -7%I -7%0 => -2%0
		8	4th shutter down (hidden in APPINFO)		-8%H -8%L -8%I -8%0 => -1%0
DTRVBT01	V24	1	Shutter up	0xx (packed) (global)	-1%L -1%H -1%I -1%0 => -2%0
		2	Shutter down		-2%H

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
			(hidden in APPINFO)		-2%L -2%I -2%0 => -1%0
DTSC02 DTSC04	LT2 LT4	1	1st push-button	Ixx (packed) (global)	-1%Pn
		...	...		...
		4	4th push-button		-4%Pn
		5	Temperature sensor	T U	-1%Tn.n -1%Un.n -1%Mn -1%Rn
		6	Remote control IR receiver	c	None
		B	1st LED indicator	0xx (packed) (global)	-1 -1%I -1%0
		...	...		...
		E	4th LED indicator		-4 -4%I -4%0
		15	Lock screen	None	-15%I
DTSC05	LT5	/2/1 (from v39.1)	1st push-button	Please see 4.6.I IO type list, status and data format	
		...	...		
		/2/4	4th push-button		

<u>Module</u>	<u>Mod Type</u>	APPINFO IO index (1-based) (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
		(from v39.1)			
		/10/1	1st LED indicator		
		...			
		/10/4	4th LED indicator		
		/8/1	Temperature sensor		
		/31/1 (from v41.3)	Video output		
		/37/1	Humidity input		
		/49/1 (from v41.3)	Gesture input		
DVIP01	VI1	1	1st push-button	Ixx (packed) (global)	-1%Pn
DVIP02	VI2	1	1st push-button	Ixx (packed) (global)	-1%Pn
		2	2nd push-button		-2%Pn
DWIND01	WI1	/41/1	Wind sensor	Please see 4.6.I IO type list, status and data format	
Air conditioner device	ACD	/8/1	Temperature sensor	Please see 4.6.I IO type list, status and data format	
		/13/1	Fan output		

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
		/54/1	Vane/Swing output		
ModBus device	MBD	None	Deprecated	None	None
Cameras	CAM	None	Cameras informations	None	None
Clocks	CLK	None	Only for simple clock	K	%Knnn
Radio Station	STA	None	Radio Station informations	None	None
Variables	VAR	None	Control variable	0xx (boolean variable) Dxx (value variable)	(none) %I %O %Dnnn (value variable only) %S (only from DAP version 40.1)
System variables	SYS	None	See 4.2 Information about system variables	0xx	(none) %I %O %S (only from DAP version 40.1)
Temperature Plage List	TPL	None	Time slot of a temperature profile	None	None
Temperature Profile	TPR	None	Name of temperature profile	None	None
Group	MEM	None	Control group	Depends on type of group. Use same status	

<u>Module</u>	<u>Mod Type</u>	<u>APPINFO IO index (1-based)</u> (in hexa for legacy LP)	<u>Description</u>	<u>Associated status type</u>	<u>Associated commands</u>
				and command than the reference IO. For mixed group, only statuses and command of relay output are used/available	
				None	(none) %I %O %S (only from DAP version 40.1)
Scene	SFE	None	Control scene	None	(none) %I %S (only from DAP version 40.1)

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

4.4.a) Overview

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

Please read 4.6.b Modules using new generation input LightProtocol and 4.3 I/O mapping of all modules to know which frame format must be used for a given module.

4.4.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 "éèêàñäí"...)
- We advise to use only ASCII characters. Accentuated character can be coded over multiple bytes under UTF-8 systems.

4.4.c) Legacy input frame format

Mod Type (3 char)	Serial Number (6 char hexadecimal)	- (1 char)	Output Number (1 or 2 char hexadecimal)	Action parameters (%...)
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Output number is 2-char long (hexadecimal base) for output of DINTDALI01 module.

4.4.d) Legacy action/command parameters

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

<u>Command</u>	<u>Description</u>	<u>Arguments</u>
%S	- ask status to a module. Index of IO must be omitted. - ask status of a group. Status of first output is returned. - ask status of a scene. Statuses of all outputs contained in the scene will be returned. For installations with DGQG02/DGQG04, this command is only available from O.S. version 25.3.0 ! (DAP version 40.1 or higher)	None
(none)	- toggle state of the output (if supported). If output is on, it will be turned off. If output is off, it will be turned on.	None
%I	- set the output - increase a value variable (VAR) - make shutter going up if used with up output - make shutter going down if used with down output	None
%O	- reset the output - decrease a value variable (VAR) - stop shutter (whatever the up or down output used)	None
%Dnnn	- assign a percentage to a dimmable output - set the value of a value variable	1 to 3 char : decimal value number between 0 and 100 %D1, %D23, %D100
%I%Dnnn	- increase value/dimmer/volume of the specified value in argument. Note: For volume, 'nnn' value has no effect for DAMPLI01 (AMP) module. Volume will only be increased by 1% Warning: This command does not work for DAP	1 to 3 char : decimal value number between 1 and 100 %I%D10

Command	Description	Arguments
	versions between 31 and 41.4 (included)	
%0%Dnnn	- decrease value/dimmer/volume of the specified value in argument Note: For volume, 'nnn' value has no effect for DAMPLI01 (AMP) module. Volume will only be increased by 1% Warning: This command does not work for DAP versions between 31 and 41.4 (included)	1 to 3 char : decimal value number between 1 and 100 %0%D10
%DIInnn	Same as %I%Dnnn (from version 41.5)	%DI10
%D0nnn	Same as %0%Dnnn (from version 41.5)	%D010
%DB	- start dimming of the input (dimmer/volume)	None
%DE	- stop dimming of the output (dimmer/volume)	None
%Xnnn	- assign a 0-to-255 value to a DMX output	1 to 3 char : decimal value number between 0 to 255 %X4, %X56, %X127, %X255
%Tnn.n	- set a new temperature heating setpoint	Floating point value in Celcius degrees %T21.5
%Unn.n	- set a new temperature cooling setpoint	Floating point value in Celcius degrees %T25.0
%Mn	- set temperature mode to the specified mode	One of these values : - 1 = away - 2 = auto - 5 = comfort - 6 = anti-freeze %M5
%Rn	- set regulation mode to the specified mode	One if these values : - 0 = off - 1 = heating - 2 = cooling

<u>Command</u>	<u>Description</u>	<u>Arguments</u>
		- 3 = mixed
%Cn (not yet available)	- start/stop/toggle color cycle of a DMX slave	One of these values : - (none) = toggle - 1 = start - 0 = stop %C1 will enable color cycle
%An	- select source for sound module Warning: This command does not work for DAP versions between 31 and 41.4 (included)	One of these values : - 1 -> 4 : auxiliary source - 5 : FM tuner %A5 will switch to FM tuner
%I%A %AN	- jump to next source (from v41.7)	None
%I%A %AN	- jump to previous source (from v41.7)	None
%Fnnn.nn	- set tuner frequency Warning: This command does not work for DAP versions between 31 and 41.4 (included)	A floating point value in MHz unit %F99.1 will jump to 99.1MHz
%I%F %FN	- seek next frequency (from v41.7)	None
%O%F %FP	- seek previous frequency (from v41.7)	None
%H	- move shutter up	None
%L	- move shutter low	None
%Pn	- simulate push on a button	One of these values : - 1=Begin short push - 2=End short push - 3=Begin long push - 4=End long push

4.4.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%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 6 th output
PBL C-1%O	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%O	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
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 6 th output
PRL C-1%O	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)

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

4.5.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)
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4.5.b) Data Types

Type	Means	Description (leading '0' can be replaced by ' ' (space))
I	Inputs	LSB = input 1, MSB = input 8. If module has more than 8 inputs, several bytes will be concatenated.
O	Outputs	LSB = output 1, MSB = output 8. If module has more than 8 outputs, several bytes will be concatenated.
D	Pecent value (Dimmers, 0-10V analog input/output)	2 bytes by output (%) Example : '6432' = first output at 100%, second output at 50%
X	0 to 255 value (DMX)	2 bytes by channel Example : 'c00080' = first channel is at 192, second channel is at 0 and third channel is at 128. From version 39.1, an extra byte 'cc' is sent to notify when the color cycle is running (only for RGBx slaves). Please note that values of RGB channels are not relevant when 'cc' byte is set. For example: 'c00080cc' means that color cycle is running for this RGB slave. If byte is missing, color cycle is not running.
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 module version 5)

Type	Means	Description (leading '0' can be replaced by ' ' (space))
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

4.5.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
FAN0000001020		DFAN01 module with serial number 0x000001 is OFF, manual mode
FAN0000001011		DFAN01 with serial number 0x01 is cooling @ speed 1, auto mode
FAN000000100C		DFAN01 with serial number 0x01 is heating @ speed 3, auto mode
FAN0000001032		DFAN01 with serial number 0x01 is cooling @ speed 2, manual mode
DMV0000001001		DMV01 with serial number 0x01 has speed 1 enabled
DMV000000100A		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
14:34 29/12/22 (DGQG01) 14:34 29/12/2022 (NewGen)	Current time of the DGQG seant each minute. - The format of the time is HH:MM in 24 hours. - The format of the date is DD/MM/YY for installations with DGQG01. - The format of the date is DD/MM/YYYY for installations with NewGen DGQG (DGQG02/04/...). Note: Each field always has a width of 2 digits. A leading 0 (zero) is added if required. With NewGen DGQG, year always has a width of 4 digits. Warning: The time is not sent for DAP versions between 31.0 and 41.6 (included).
!! 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.
--	--

4.5.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, functionality/capability must be hidden to user. In other words, when a bit is set, user can not request the functionality.
 - 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, functionality/capability must be hidden to user. In other words, when a bit is set, user can not request the functionality.
 - 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
```



4.6. New generation LightProtocol

4.6.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.

4.6.b) Modules using new generation input LightProtocol

- DALI04
- DALI05
- DDIMLV01
- DDMX02
- DENV01
- DENV02
- DELEC01
- DGQG02
- DGQG03
- DMOV06
- DMOV07
- DRGBW01
- DTSC05
- DWIND01

4.6.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.

4.6.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 (4.5.d Decoding APPINFO).

See 4.6.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 4.6.I IO type list, status 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 4.6.e Extra informations in APPINFO.

4.6.e) Extra informations in APPINFO

- *TypeInputlo(2)* : `/<type_of_link>`
 - `<type_of_link>`:
 - 0 = No link
 - 1 = Short push only
 - 2 = Short and long push
- *TypeSensorlo(8)* : `/<regul_mask>|<temperature_mask>|<heat_limit_high>|<heat_limit_low>|<cool_limit_high>|<cool_limit_low>|<setpoint_step>`
 - `<regul_mask>` :
 - 0b00000001 = hide mode off.
 - 0b00000010 = hide mode heating.
 - 0b00000100 = hide mode cooling.
 - 0b00001000 = hide mode mixed.
 - 0b00010000 = hide mode auto hvac. (since v41.0)
 - 0b00100000 = hide mode dry. (since v41.0)
 - 0b01000000 = hide mode fan. (since v41.0)
 - `<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).
- *TypeDmvlo(13)* : `/<data_version>|<number_of_speed>|<has_off>|<has_auto>`
 - `<data_version>` : Defines the structure of the following data
 - `<number_of_speed>` : how much speeds has the IO
 - `<has_off>` : if not null, DMV can be turned off. Otherwise, only a speed between 1 and `<number_of_speed>` can be set



- `<has_auto>` : if not null, DMV has a auto mode. Status of IO will be 254 if device is in auto mode and speed is undefined)
- TypeDmxlo (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)
- TypeSwinglo (54) : `/<number_of_position>`
 - `<number_of_position>` : how much positions has the IO.

4.6.f) Example of APPINFO frame

- `QG2/12/2/1/Hall lights/1.8.0/[Ground floor|Hall]/0`
 - Module: DGQG02
 - Decimal serial number: 12
 - Type: input/push button (2 = TypeInputlo)
 - Input index: 1
 - Name: "Hall lights"
 - Version of DGQG02: 1.8.0
 - Location: at "Ground Floor" in "Hall room"
 - No link programmed (0)
- `QG2/12/2/2/Living lights/1.8.0/[Ground floor|Living]/2`
 - Module: DGQG02
 - Decimal serial number: 12
 - Type: input/push button (2 = TypeInputlo)
 - Input index: 2
 - Name: "Living lights"
 - Version of DGQG02: 1.8.0
 - Location: at "Ground Floor" in "Living room"
 - Long and short pushes are enabled (links programmed) (2)
- `PS4/2/51/1/DALI04/3/[House| ]`
 - Module: DALI04
 - Decimal serial number: 2
 - Type: Power supply output (51 = TypePowerSupplylo)
 - Output index: 1
 - Name: "DALI04"
 - Version of DALI04: 3
 - Location: not placed in a floor/room
- `LT5/16/8/1/T° Sensor DTSC05/7.0.0/[House| ]/1|8|30.0|15.5|41.3|22.0|0.5`
 - Module: DTSC05
 - Decimal serial number: 16



- Type: Temperature sensor (8 = TypeSensorlo)
- Sensor index: 1
- Name: "T° Sensor DTSC05"
- Version of DTSC05: 7.0.0
- Location: not placed in a floor/room
- Hide temperature mode: "off" (mask 0x01)
- Hide regulation mode: "frost" (mask 0x08)
- Heating setpoint high limit: 30.0°C
- Heating setpoint low limit: 15.5°C
- Cooling setpoint high limit: 41.3°C
- Cooling setpoint low limit: 22.0°C
- Setpoint increment step: 0.5°C
- `EL1/12/24/1/Sensor DELEC01/1.0.0/[House| ]`
 - Module: DELEC01
 - Decimal serial number: 12
 - Type: Energy metering input (24 = TypeEleclo)
 - Input index: 1
 - Name: "Sensor DELEC01"
 - Version of DELEC01: 1.0.0
 - Location: not placed in a floor/room

4.6.g) Status frame format (*LightProtocol server to LightProtocol client*)

See 4.6.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 Abbreviation of Modules' type for more informations.
- `<serial number>` : is expressed in decimal.
- `<IO type>` : can be one of the following given in section 4.6.i IO type list, status and data format.
- `<IO offset>` : 1-based offset for the given IO type.
- `<datax>` : Status starting from IO with offset `<IO offset>`. If several statuses are provided (separated using the number sign (#)), IO offset should be increased each the time number sign (#) is decoded and associate the value following this number sign (#) to this "increased" IO offset. The format of the data depends on `<IO type>`, see section 4.6.i IO type list, status and data format for more informations.

4.6.h) Examples of status frame

- `QG2/12/2/1/2#2#1#2#2#2#2#2#2#2#2`
DGQG02, serial 12, TypeInputlo, from input 1 (IN1) to input 12 (IN12), all inputs are released except IN3 which is pressed.
This kind of frame is received in reply to the PING command (5.7 Refresh statuses).
- `QG2/12/2/11/1`
Status of inputs (2 = TypeInputlo) and starts from input 11.
Input 11 has just changed and is pressed.
- `QG2/12/1/1/0`
DGQG02, serial 12, TypeTorlo, output 1 (OUT1), off state
- `QG2/12/1/8/1`
DGQG02, serial 12, TypeTorlo, output 8 (OUT8), on state

- QG2/1/23/1/45#0
DGQG02, serial 12, TypeOut10Vlo, from 0-10V output 1, « +1 » output = 0 % (0V) and « +2 » output = 45 % (4,5V)
- QG2/1/23/2/0
DGQG02, serial 12, TypeOut10Vlo, 0-10V output 2 (+2), 0 % (0V)
- QG2/1/23/1/45
DGQG02, serial 12, TypeOut10Vlo, 0-10V output 1 (+1), 45 % (=4,5V)
- PS4/2/51/1/19|15.1|39
DALI04; serial 2, TypePowerSupplylo, output 1, load = 19%, voltage = 15.1V, internal temperature = 39°C
- MV6/3/34/1/1
DMOV06, serial 3, TypeMovlo, input 1, start detection
- MV6/3/34/1/2
DMOV06, serial 3, TypeMovlo, input 1, end of detection
- EV1/3/37/1/56.6
DENV01, serial 3, TypeHumiditylo, input 1, 56.6% RH
- EV1/3/38/1/996.4
DENV01, serial 3, TypePressurelo, input 1, 996.4 hPa
- EV1/3/36/1/1798
DENV01, serial 3, TypeLuxlo, input 1, 1798 lux
- EV2/7/39/1/550.6
DENV02, serial 7, TypePressurelo, input 1, 550.6 hPa
- EV2/7/37/1/54.2
DENV02, serial 7, TypeHumiditylo, input 1, 54.2% RH
- EV2/7/8/1/22.1|24.0|AUTO|21.0|25.0|HEATING|27.0
DENV02, serial 7, TypeSensorlo, input 1,
current temperature is 22.1°C,
active heating setpoint is 24.0°C,
current temperature mode is AUTO,
profile heating setpoint is 21.0°C,
active cooling setpoint is 25.0°C,
current regulation mode is HEATING,
profile cooling setpoint is 27.0°C

4.6.i) Command frame format (LightProtocol client to LightProtocol server)

See 4.6.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 decimal.
- **<IO type>** : can be one of the following given in section 4.6.I IO type list, status 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 4.6.I IO type list, status and data format for more informations.

- `<datax.y>` : argument/extra data associated to the `<cmdx>`. Data are separated from each others and its related command by a pipe (`|`). This field is optional.

4.6.j) 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 :
`DX2/15/25/5/71|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)
- Ask status of all inputs/outputs of DTSC05 s/n 87 (`<IO offset>` should be null and value of `<IO type>` does not matter):
`LT5/87/0/0/0x67`
or
`LT5/87/8/0/0x67`
or
`LT5/87/0/0/103`
- Ask status only of humidity input of DTSC05 s/n 87:
`LT5/87/37/1/103`

4.6.k) List of available commands for outputs

All of these commands are not available for all type of outputs. See 4.6.l IO type list, status and data format for possible combination. **Please note that these commands are only valid for outputs. For inputs, please see 4.6.l IO type list, status and data format**

<u>Command number</u>	<u>Command name</u>	<u>Description</u>
1	Toggle	Toggle state of output to on or off depending of current state
2	On	Turn output on
3	Off	Turn output off
5	Set value	Set output to specified value
10	Move up	Move the shutter up
11	Move down	Move the shutter down
16	Increase speed/position	Increase speed of a fan
17	Decrease speed/position	Decrease speed of a fan

71	Set color	Set color of a RGB output
77	Color cycle	Control color cycle of a RGB output
103	Status	Ask status of all IOs of a module or of a specific IO of a module

4.6.I) IO type list, status and data format

Decimal number used to define the category of the IO :

- **TypeTorlo** (1) : Relay
 - Unit : none
 - Possible status : 0-1
 - Possible command : 1-3, 103
 - 1 = toggle
 - 2 = on
 - 3 = off
 - 103 = status
- **TypeInputlo** (2) : Push-button input
 - 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, 103
 - 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
 - 103 = status
- **TypeDimmerlo** (3) : Dimmer output
 - Unit : percent (%)
 - Possible status : 0-100
 - Possible command : 1, 2, 3, 5, 103
 - 1 = toggle
 - 2 = on
 - 3 = off
 - 5 = set to value given in `<data>`.
 - 103 = status
- **TypeTrvlo** (6) : Shutter output
 - 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, 103



- 3 = stop shutter
 - 10 = move shutter up
 - 11 = move shutter down
 - 103 = status
- **TypeSensorlo (8) : Temperature sensor**
 - 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, 55, 82, 103
 - 1 = set heating setpoint
 - `<data>` contains value in xx.x
 - 2 = set cooling setpoint
 - `<data>` 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
 For example: 55/2 to set automatic mode
- **TypeLedlo (10) : LED indicator**
 - Unit : none
 - Possible status : 0-1
 - Possible command : 1-3, 103
 - 1 = toggle
 - 2 = on
 - 3 = off
 - 103 = status
- **TypeDmvlo (13) : Fan**
 - Unit : none
 - Possible status :
 - 0-`<number_of_speeds>` if `<has_off>` is not null
 - 1-`<number_of_speeds>` if `<has_off>` is null
 - In addition of speeds above, a value of 254 can be returned if `<has_auto>` is not null and speed of the device is currently in auto mode.
 - Possible command : 3, 5, 16 and 17, 103
 - 3 = off (only if `<has_off>` is not null)
 - 5 = set speed to value given in `<data>`. From 0 or 1 to `<number_of_speeds>`; and 254 (if `<has_auto>` is not null)
 - 16 = increment speed
 - 17 = decrement speed
 - 103 = status
- **TypeOut10Vlo (23) : 0-10V output**
 - Unit : percent (%)
 - Possible status : 0-100
 - Possible command : 1, 2, 3, 5, 103

- 1 = toggle
- 2 = on
- 3 = off
- 5 = set to value given in `<data>`.
- 103 = status



- **TypeEleclo (24) : Energy metering input**

- Unit : none

- Possible status : contains several data separated by pipe '|' !

```
<number_of_lines>|<frequency>|<voltage_l1>|<intensity_l1>|
<instant_power_l1>|<power_factor_l1>|<total_energy_l1>|<voltage_l2>|
<intensity_l2>|<instant_power_l2>|<power_factor_l2>|
<total_energy_l2>|<voltage_l3>|<intensity_l3>|<instant_power_l3>|
<power_factor_l3>|<total_energy_l3>|<consumed_power>|
<produced_power>|<total_power>|<forward_energy>|<reverse_energy>|
<total_energy>|<tariff_indicator>|<total_energy_for_t1>|
<total_energy_for_t2>|<total_energy_for_t3>|<total_energy_for_t4>
```

- **<number_of_lines>** : defines the number of lines handled. Value will always be between 1 and 3.
- **<frequency>** : Power grid frequency.
- **<voltage_lx>** : Active power for line x where x is the line number between 1 and 3 (value is given in V).
- **<intensity_lx>** : Instant intensity for line x where x is the line number between 1 and 3 (value is given in mA).
- **<instant_power_lx>** : Active power for line x where x is the line number between 1 and 3 (value is given in W). If value is negative it means that there is more production than consumption on that line (energy is sent back on grid).
- **<power_factor_lx>** : ratio between real power and apparent power. Value will be between 0 and 1.
- **<total_energy_lx>** : Total energy for line x where x is the line number between 1 and 3 (value is given in Wh).
- **<consumed_power>** : Instant consumed power (value is given in W).
- **<produced_power>** : Instant produced power (value is given in W).
- **<total_power>** : Difference between consumed power and produced power (value is given in W). If value is negative it means that there is more production than consumption on that line (energy is sent back on grid).
- **<forward_energy>** : total energy consumed from grid for all tariff's (value is given in Wh).
- **<reverse_energy>** : total energy returned to the grid for all tariff's (value is given in Wh).
- **<total_energy>** : Difference between forward and reverse energy (value is given in Wh).
- **<tariff_indicator>** : defines the current tariff active. Value will always be between 1 and 4.
- **<total_energy_for_t1>** : total energy for tariff 1 (value is given in Wh). If value is negative this means that there is more produced energy than consumed energy for this tariff.
- **<total_energy_for_t2>** : total energy for tariff 2 (value is given in Wh). If value is negative this means that there is more produced energy than consumed energy for this tariff.
- **<total_energy_for_t3>** : total energy for tariff 3 (value is given in Wh). If value is negative this means that there is more produced energy than consumed energy for this tariff.



- `<total_energy_for_t4>` : total energy for tariff 4 (value is given in Wh). If value is negative this means that there is more produced energy than consumed energy for this tariff.
 - Possible command : 103
 - 103 = status
- **TypeDmxlo (25) : DMX output**
 - Unit : none
 - Channel separator : |
 - Example : `DX2/20/25/71|0x06|0|56|55` : values of channels of second slave of DDMX02 n°20 are red = 0, green = 56 and blue = 55
 - From version 39.1, an extra channel value is set for RGB/RGBI/RGBW/... slaves when the color cycle is running. Please note that value of RGB channels are not relevant when color cycle is running. So for a RGBW slave, if color cycle is not running `255|0|255|200` (cyan + white) is received. if color cycle is running, `255|0|255|200|204` (RGB color was cyan before running color cycle but is no more relevant, white + color cycle) is received.
 - Possible status : 0-255.
 - Possible command : 1, 2, 3, 71, 77, 103
 - 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`.
 - 77 = Start, stop or toggle color cycle according optional informations given in `<data>` with `<data> = <enable>`
 - `enable = 1` will enable the color cycle, 0 will stop it. If `<data>` is omitted, a toggle will be performed. This command will only work on RGB slave (cf 4.6.e Extra informations in APPINFO). This command is only available from "PROG M 39.1" (cf 4.5.d Decoding APPINFO)
 - 103 = status
 - **TypeDali (29) : DALI output**
 - **TypeVideolo (31) : Video output**



- Unit : none
- Possible status : Combination of following flags
 - 0x01 = Video output is online and is ready to display video stream
 - 0x02 = Incoming call running (bell)
 - 0x04 = Call has been caught. Bi-directional connection established with doorstation.
 - 0x08 = For half-duplex audio communication only : sound from microphone of the screen is sent to doorstation.
 - 0x10 = A video stream is currently playing on video output
 - 0x20 = The currently played video stream has been started by user directly from screen (not started due to a call)
- Possible command : 103
 - 103 = status
- **TypeMovlo (34) : Motion detector input**
 - 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, 103
 - 1 = Execute links associated to start of detection
 - 2 = Execute links associated to end of detection
 - 103 = status
- **TypeLuxlo (36) : Light sensor input**
 - Unit : lux (lux)
 - Possible status : 0-16.000 (can be higher)
 - Possible command : 103
 - 103 = status
- **TypeHumiditylo (37) : Humidity sensor input**
 - Unit : percent (% RH)
 - Possible status : 0-100
 - Possible command : 103
 - 103 = status
- **TypePressurelo (38) : Atmospheric pressure sensor input**
 - Unit : hectopascal (hPa)
 - Possible status : 300-1100
 - Possible command : 103
 - 103 = status
- **TypeCo2lo (39) : Carbon dioxide sensor input**
 - Unit : parts-per-million (ppm)
 - Possible status : 0-40000
 - Possible command : 103
 - 103 = status
- **TypeWindlo (41) : Wind speed/direction sensor input**
 - Unit : kilometer-per-hour (km/h)
 - Possible status : contains several data separated by pipe '|' !

<wind speed>|<wind direction>

 Wind speed : 0 to 200 km/h
 Wind direction : N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW (with 'N' meaning "North", 'E' meaning "East", 'S' meaning "South" and 'W' meaning "West").



For example: `10.0|NE` meaning Noth-East wind with a speed of 10.0 km/h.

- Possible command : 103
 - 103 = status
- **TypeLblo (42) : LightBus dimmer output**
 - Unit : percent (%)
 - Possible status : 0-100
 - Possible command : 1, 2, 3, 5, 103
 - 1 = toggle
 - 2 = on
 - 3 = off
 - 5 = set to value given in `<data>`.
 - 103 = status
- **TypeRgbwlo (46) : RGBW output**
 - Unit : none
 - Channel separator : |
 - Example : `RW1/20/46/1/0|56|55|200` : values of channels of second slave of DDMX02 n°20 are red = 0, green = 56, blue = 55 and white = 200.
 - From version 41.7.1, an extra channel value is set when the color cycle is running. Please note that value of RGB channels are not relevant when color cycle is running. So for a RGBW slave, if color cycle is not running `255|0|255|200` (cyan + white) is received. if color cycle is running, `255|0|255|200|204` (RGB color - was cyan before running color cycle but is no more relevant -, white + color cycle) is received.
 - Possible status : 0-255.
 - Possible command : 1, 2, 3, 71, 77, 103
 - 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. 3 values are needed. `value1` = Red channel, `value3` = Blue channel. Example : `0x07|100|255|100`.
 - 0x08: set white channel. 4 values are needed. `value4` will be used. `value1` to `value3` will be ignored. Example `0x08|0|0|0|255`.
 - 0x10: set virtual Intensity channel of RGB. 5 values are needed. `value5` will be used. `value1` to `value4` will be ignored. Example `0x10|0|0|0|0|255`.
 - 77 = Start, stop or toggle color cycle according optional informations given in `<data>` with `<data> = <enable>`

- enable = 1 will enable the color cycle, 0 will stop it. If `<data>` is omitted, a toggle will be performed. This command is only available from "PROG M 39.1" (cf 4.5.d Decoding APPINFO)
 - 103 = status
- **TypeGesturelo (49) : Gesture input**
 - Unit : none
 - Possible status :
 - 0 = last gesture is unknown
 - 4 = an up gesture as just been performed or last gesture was up
 - 5 = a down gesture as just been performed or last gesture was down
 - Possible command : 4, 5, 103
 - 4 = execute links associated to up gesture
 - 5 = execute links associated to down gesture
 - 103 = status
- **TypePowerSupplylo (51) : Domintell bus power supply**
 - Unit : Percent (%), Volts (V) and Degrees (°C)
 - Possible status : `<percentage_of_load>|<output_voltage>|<internal_temperature>`
 - Possible command : 103
 - 103 = status
- **TypeSwinglo (54) : Vane/Swing**
 - Unit : none
 - Possible status :
 - 1-`<number_of_positions>`
 - In addition of positions above, a value of 254 can be returned when the vane of the device is currently in swing mode.
 - Possible command : 5, 16 and 17, 103
 - 5 = set position to value given in `<data>`. From 1 to `<number_of_positions>`; and 254 (to start swinging)
 - 16 = increment position
 - 17 = decrement position
 - 103 = status

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

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

4.8. 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") =
"df6b9fb15cfdbb7527be5a8a6e39f39e572c8ddb943fbc79a943438e9d3d85ebfc2ccf9e0eccd9346026c0b6876e0e01556fe56f135582c05fbd9b505d46755a"**

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>`) :

**"df6b9fb15cfdbb7527be5a8a6e39f39e572c8ddb943fbc79a943438e9d3d85ebfc2ccf9e0eccd9346026c0b6876e0e01556fe56f135582c05fbd9b505d46755a" + "9301906811536867321" =
"df6b9fb15cfdbb7527be5a8a6e39f39e572c8ddb943fbc79a943438e9d3d85ebfc2ccf9e0eccd9346026c0b6876e0e01556fe56f135582c05fbd9b505d46755a9301906811536867321"**

5. Hash the nonce and the hashed salted password:

```
SHA512("9301906811536867321df6b9fb15cfdbb7527be5a8a6e39f39e57  
2c8ddb943fbc79a943438e9d3d85ebfc2ccf9e0eccd9346026c0b6876e0e0  
1556fe56f135582c05fbdbb505d46755a") =  
"c83b274c82c98965b558762e9f05e5556de17712c9c74ca372eb6452396  
3ec729def36c384e7ef8a19a8c7373ac3cc4f10d567bc3b2110fec80c199fc  
ea08b01"
```

6. Build LOGINPSW command:

```
>  
LOGINPSW@toto:c83b274c82c98965b558762e9f05e5556de17712c9c74ca372eb64  
523963ec729def36c384e7ef8a19a8c7373ac3cc4f10d567bc3b2110fec80c199fce  
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  
523963ec729def36c384e7ef8a19a8c7373ac3cc4f10d567bc3b2110fec80c199fce  
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

To download list of modules, inputs, outputs, ..., `APPINFO` command must be invoked. A full description of the installation.

```
> APPINFO  
< APPINFO (PROG M 38.0 00/00/00 00h00 Rev=0) => DOMINT_v02.dap :  
< ET2 1[VERS=0x14]MOD DETH02[Maison| ]
```



```

< BU6      1-1Input DPBU06 1[House| |][PUSH=LONG]
< BU6      1-2Input DPBU06 2[House| |][PUSH=LONG]
< BU6      1-3Input DPBU06 3[House| |][PUSH=LONG]
< BU6      1-4Input DPBU06 4[House| |][PUSH=LONG]
< BU6      1-5Input DPBU06 5[House| |][PUSH=LONG]
< BU6      1-6Input DPBU06 6[House| |][PUSH=LONG]
< BU6      1-7Output DPBU06 1[House| |]
< BU6      1-8Output DPBU06 2[House| |]
< BU6      1-9Output DPBU06 3[House| |]
< BU6      1-AOutput DPBU06 4[House| |]
< BU6      1-BOutput DPBU06 5[House| |]
< BU6      1-COutput DPBU06 6[House| |]
< DX2/20/25/1/DMX2 RGBW 1/0.0.0/[House| |]/4|3
< ...
< END APPINFO - Send "HELP" from ETH.
< Datasheet @ www.domintell.com => Pro - support@domintell.com

```

Once all informations have been collected and processed, commands related to each items can be sent to DGQG to control the installation. Please see chapter 4.5.d Decoding APPINFO to know how to parse and decode APPINFO.

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#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.

Important note : only invoke `PING` command when socket has been reconnected. Do not call PING periodically or when you enter/exit a room/floor !

5.8. Close session before exiting the application

If your application is closed or put in background, it is better to send the LOGOUT command to allow other applications/devices to use DGQG02/DGQG04/DNET01/...

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