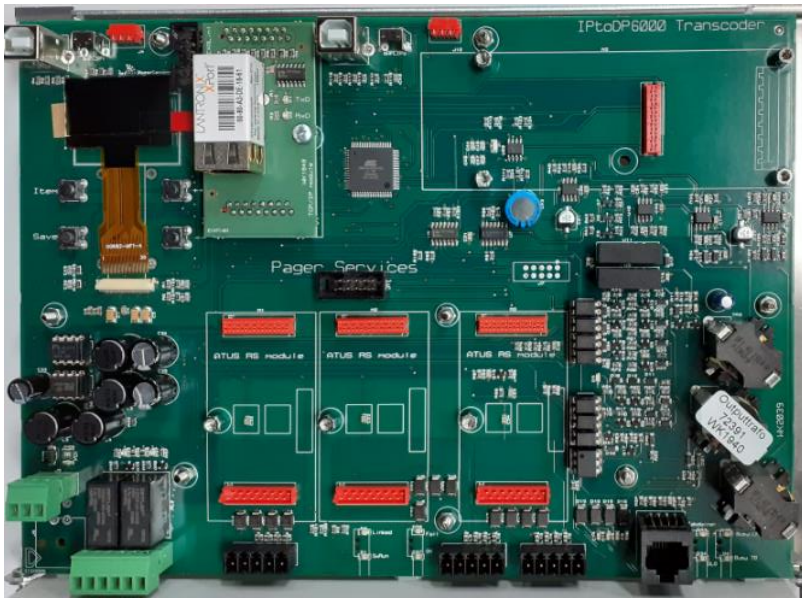
DP6000-IP Converter
Tetronik Special

AN_DP6000_IP Converter_Tetronik_En_2434



- Protocol description
- Installation instructions

PagerServices
committed to connect

Table of contents

1 About this manual 3
1.1 Function 3
1.2 Digital version 3
1.3 Precautions and notes 3
1.3.1 Signs 3
1.4 Examples 3
1.5 Disclaimer 3
1.5.1 Illustrations 3
2 Introduction 4
2.1 Main Features 4
2.1.1 Part numbers 4
3 Mechanical data 5
3.1 Mechanical 5
3.2 Drilling pattern 5
4 Hardware description 6
4.1 Introduction 6
4.2 Hardware- and user interfaces 6
4.2.1 Paging bus Converter 6
4.3 Power Supply 7
4.4 Output contact 7
4.5 TCP/IP Module 7
4.6 Pushbuttons 7
4.7 Display information 7
4.8 Menu 7
4.9 MAC address 7
4.10 Diagnose menu 8
4.11 Setup menu 8
4.11.1 IP settings 8
4.11.2 Set the IP address 8
4.11.3 Set the Gateway 8
4.11.4 Set the subnet mask 8
4.11.5 Set the Port address 9
4.11.6 Set IP settings to default 9
4.12 Testfunctions menu 9
4.13 Software versions menu 9
4.14 LED indications 10
4.14.1 LED indications; IP Converter module 10
4.14.1 LED indications DP6000-IP Converter 10
4.15 Firmware version 10
5 Using the Converter for the first time 11
5.1 General remarks 11
5.2 Send a status request to the DP6000-IP Converter: 11
5.2.1 List of identifiers: 11
5.3 Send Firmware version request to the DP6000-IP Converter 11
5.3.1 List of identifiers: 11
5.4 Send setup to DP6000-IP Converter 12
5.5 Send setup to DP6000-IP Converter (Continued) 13
5.5.1 List of identifiers: 13
5.5.2 DP6000 specific settings 13
5.6 Request setup from Converter 14
5.6.1 List of identifiers: 14
5.7 Sent call to DP6000 bus line 15
5.7.1 Identifiers: 15
5.8 Send call to DP6000 LF line 16
5.8.1 Identifiers: 16
5.9 Receive call from DP6000 line 17
5.9.1 Identifiers: 17

1 About this manual

1.1 Function

This manual gives external developers the necessary information to use the embedded DP6000 protocol to communicate with an external application, to be implemented at the site of AKH Wien. Next to that, this document provides installation engineers to carry out the mechanical installation of this specialized DP6000-IP Converter.

1.2 Digital version

The Installation manual is also available as a digital file (Adobe Portable Document File, PDF).
When the PDF refers to a location that contains more data, you can click the text to go there.

1.3 Precautions and notes

This manual uses 3 levels of precaution. The precaution shows the result of not obeying the instructions.
These are the types:

1. Note — A note gives more data.
2. Caution — If you do not obey the caution, you can cause damage to the equipment.
3. Warning — If you do not obey the warning, you can cause personal injury or severe damage to the equipment.

1.3.1 Signs

This shows each caution, warning and danger with a sign. The sign shows the result of not obeying the instructions.

Warning: General sign for cautions warnings and dangers.

Caution: Risk of electrical shock.

Note: The general sign for a note.

1.4 Examples

The manual contains numerous examples, for instance in the form of screen shots. Please note that the examples may differ more or less from you situation, depending on version differences, settings, configuration details, resolution, etc.

Note: The screenshots shown in this manual may appear different on your PC, depending on windows version, configuration, etc. etc. In some cases the steps may even be slightly different than described. It might also be possible that there are alternative ways that are not described in this manual.

1.5 Disclaimer

International Pager Services B.V. reserves the right to change data and/or specification of any equipment or software mentioned in this publication without prior notice. Although every effort is made to ensure that the information in this publication is accurate and correct, International Pager Services B.V. is not responsible for damage arising from its misuse.

1.5.1 Illustrations

The illustrations in this manual are indicative only and may differ depending on:

- The hardware version.
- The software version of the relevant hardware.

2 Introduction

- For fa. Tetronik in Taunusstein, Germany a special version of the DP6000-IP Converter was developed. This due to their need to create an interface to the DP6000 infra and their 3rd party solution.
- Functions that are not described in the document are to be considered as 'not implemented function'.

2.1 Main Features

- Linux based software
- Guarded system infrastructure
- Fault contact for fault signalisation

2.1.1 Part numbers

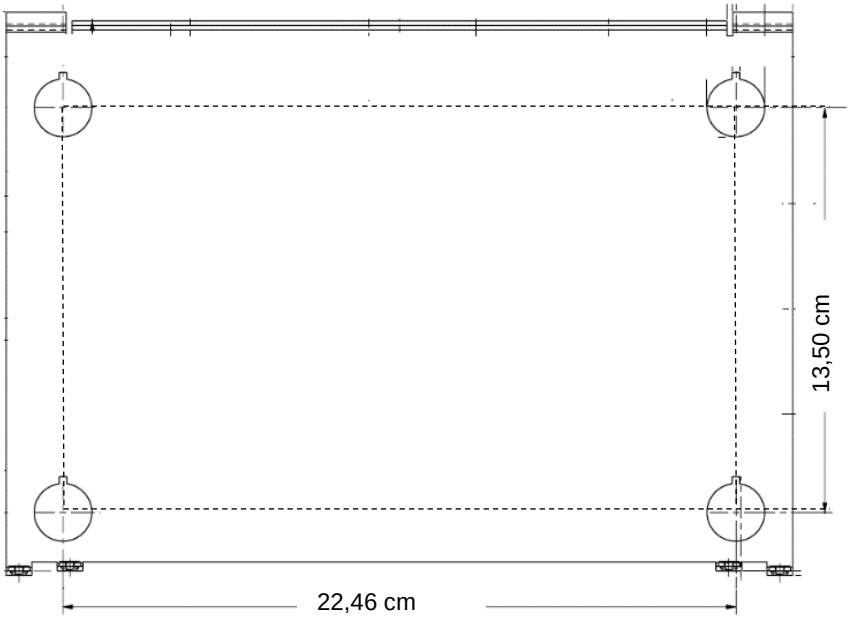
Description	12NC	Type nr	Remark
DP6000_IP Converter (special)	8900 800 11001	LBB8000/10	Incl. Special SW version for AKH Wien
Power Supply	8900 593 40101	LBB5934/01	Power supply 12V-1,25A

3 Mechanical data

3.1 Mechanical

Parameter	Value
Weight [grams]	Approx..1kg
Size: LxWxH [mm]	81.5 x 270 x 190 mm
Dust and waterproof	IP40
Use	Indoor

3.2 Drilling pattern

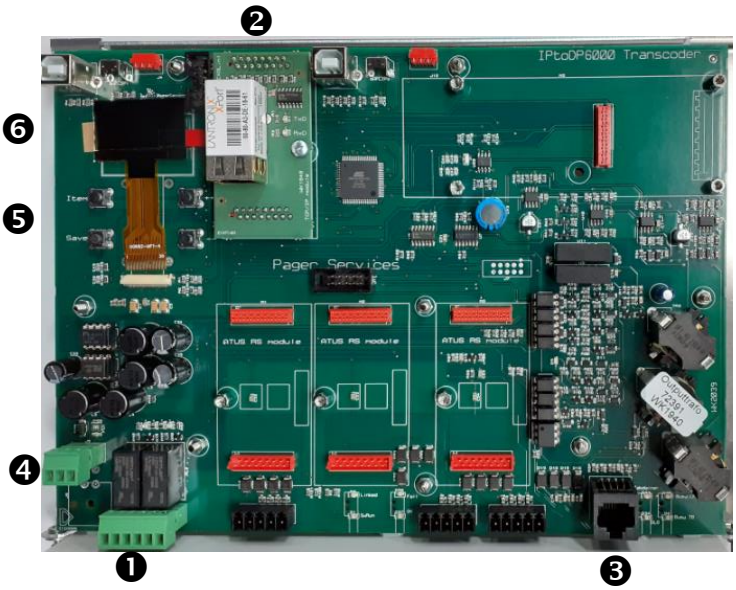


4 Hardware description

4.1 Introduction

DP6000-IP Converter (special version) is mainly controlled by the software that is used by the 3rd party.
Besides this the DP6000-IP Converter has its own embedded firmware.

4.2 Hardware- and user interfaces



❶ Output contacts; Re1.
❷ TCP/IP module
❸ DP6000 bus interface
❹ 12V Power supply
❺ Pushbuttons (6x)
❻ Display
❼ LEDs; Functions are here described "LED indications"

4.2.1 Paging bus Converter

To connect the unit with the DP6000 bus ❸ an RJ45 cable is used. There is the choice to mount an 16 pole Hirschmann connector to the other side or to keep the RJ45 connector there.
It might help you if you want to replace one side of the RJ45 cable with an Hirschmann connector or the other way around.

- If programmed by the installer, the paging line can be guarded and if an error occurs, a follow-up can be arranged e.g. to inform technicians.

The relation with the pinout of the 25-pole D-connector that was used with the former Alpha-desk is listed in the table below. (paging-lines, TB-lines and system ground).

Hirschmann Connector:	RJ45 pin:	25-pole D Connector:	Signal	8 wire UTP	Remark
1	1	3	Paging line 1	pair 1	Phase sensitive
2	2	16	Paging line 2	pair 1	Phase sensitive
-	3	-	-	pair 2	
4	4	10	system earth	pair 3	
-	5	-	-	pair 3	
-	6	-	-	pair 2	
5	7	1	TB-line 5	pair 4	Phase sensitive
6	8	14	TB-line 6	pair 4	Phase sensitive

Note: Connections used with an Alpha desk (e.g. like the external Watchdog relays) are not listed in the table above, these are not relevant for the Communication Server.

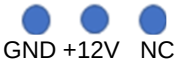
Note: Only 3-wire operation for the Paging lines, The functionality for the TB-lines is **NOT** supported.

Continue at next page: →

4.3 Power Supply

It is advised to use the LBB5943/01 12V-1,5A Power supply.

- The connection is polarity sensitive.
- Connect the power supply at position ❹ as indicated in the diagram.

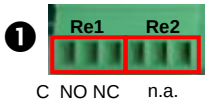


> Note: It is advised to use a power supply supplied from IPS; e.g. LBB5934/01

4.4 Output contact

The Converter has 1 working internal output contact i.e. Re1 (The function of Re2 is not implemented).

- The relays are located at position ❶.
- The relays at the left is Re1, the relays at the right is Re2.
- Re1 has a 3 pole connector:
  - Normal Open (NO), Normal Closed (NC) contact.
  - Terminal C is the common contact.
- If a relays is activated a blue LED will lit.
- Re1 works a as a fault relay, when IP connection is lost longer than programmed in Setup.
  - Re2 is not used.



4.5 TCP/IP Module

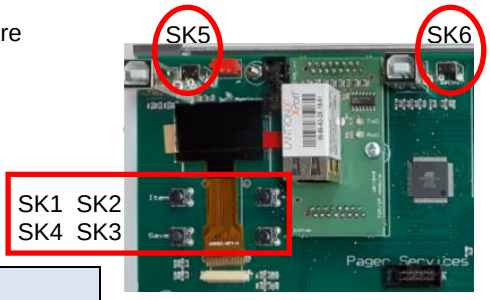
An IP connector is available at the TCP/IP module.

- At the connector module, 2 LEDs indicates whether there is a connection with the IP-network and if there is data communication.
- Some LEDs at the PCB itself, indicates if there is IP data transmitted or received.
- The MAC address of the TCP/IP Module is printed on the IP-connector, as marked in RED.

4.6 Pushbuttons

At the DP6000-IP Converter, several push buttons are present, some of these are used to check and change settings.

- SK1; Item
- SK2: ++ (up)
- SK3: -- (down)
- SK4: Save
- SK5: At the upper left corner of the PCB
- SK6: Right from the TCP-IP module

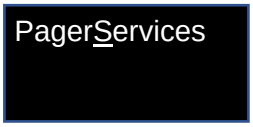


> Note: Next to the described function of SK5, SK5 and SK6 are used when a firmware update at the DP6000-IP Converter is carried out.

4.7 Display information

A small display is available at the DP6000-IP Converter, to display the following information:

- At start-up the stand-by screen is displayed.
- The 'S' of the phrase PagerServices blinks 'S' to 's' to indicate the that firmware is running.



4.8 Menu

By pressing SK1 it is possible to navigate to the following menu:

- Diagnose
- Setup
- Testfunctions
- SW version

4.9 MAC address

To check the MAC address of the DP6000-IP Converter, refer to chapter "Diagnose menu".

Continue at next page: →

PagerServices committed to connect

4.10 Diagnose menu

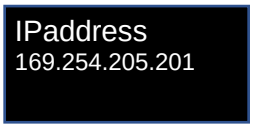
- Press SK1 one (1) times to navigate to the Diagnose menu.
- Press SK4 one (1) time to confirm.
- Press SK4 to navigate through the parameters listed below:
  - IP address
  - Gateway
  - Subnet
  - NS address (if relevant).
  - Mac address
- Laving this menu: press SK5 or wait for a time out of 25 seconds.

4.11 Setup menu

4.11.1 IP settings

The IP settings at the DP6000-IP Converter can be seen in the display and checked/changed manually by using SK1…SK4.

4.11.2 Set the IP address

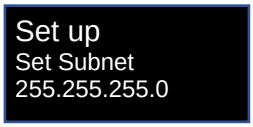


- Press SK1, two (2) times to navigate to the Setup menu.
- Press SK4 one (1) time to confirm.
  - The capital A indicates the part of the IP address that can be set.
  - When the cursor is at the desired position, (a, b, c, d) set that part of the IP address to the desired value.
  - Press with the ‘up’ and ‘down’ button until the correct value is reached.
  - By pressing SK1, the setting changes in steps of ‘10’
  - Press the ‘save’ button to save the value.
  - Press SK1 again to move the cursor to setting B, C or D. and repeat the steps as described above.
- If you want to continue to set the gateway address, select SK4 again once you scrolled to ‘D’.
- After changing the IP address, check with ‘Ping’ if the unit is reachable via the IP network.
- Leaving this menu: press SK5 or wait for a time out of 25 seconds.
- Note down the IP settings in a document, because there is no back-up for this setting.

4.11.3 Set the Gateway

- When the cursor from the previous setting, is at the desired position, (a, b, c, D) and SK4 is pressed again, the default gateway address can be set to the desired value.
  - Press with the ‘up’ and ‘down’ button until the correct value is reached.
  - By pressing SK1, the setting changes in steps of ‘10’.
  - Press the ‘save’ button to save the value.
  - Press SK1 again to move the cursor to setting B, C or D. and repeat the steps as described above.
- If you want to continue to set the subnet mask, press SK4 again once you scrolled further after reaching ‘D’.
- Leaving this menu: press SK5 or wait for a time out of 25 seconds.
- Write the IP settings in a document, because there is no back-up for this setting.

4.11.4 Set the subnet mask



- When the cursor from the previous setting, is at the desired position, (a, b, c, D) and SK4 is pressed again, the gateway address can be set to the desired value.
  - If you want to skip this setting just select SK4 once more, the option to change the port address will appear.
- To change the subnet mask continue:
  - Press with the ‘up’ and ‘down’ button until the correct value is reached.
  - By pressing SK1, the setting changes in steps of ‘10’.
  - Press the ‘save’ button to save the value.
  - Press SK1 again to move the cursor to setting B, C or D. and repeat the steps as described above.
- If you want to continue to set the port number select SK4 again once you scrolled to the last byte ‘0’.
- Leaving this menu: press SK5 or wait for a time out of 25 seconds.
- Note down the IP settings in a document, because there is no back-up for this setting.

Continue at next page: →

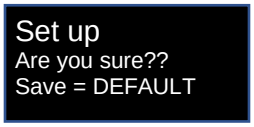
4.11.5 Set the Port address

- When the cursor from the previous setting, is at the desired position, (a, b, c, D) and SK4 is pressed again, the port address can be set.
  - If you want to skip this setting just select SK4 once more.
- To change the subnet mask continue:
  - Press with the 'up' and 'down' button until the correct value is reached.
  - By pressing SK1, the setting changes in steps of '10'.
  - Press the 'save' button to save the value.
- If you want to continue to set the all IP settings to their default values, select SK4 again once.
- Leaving this menu: press SK5 or wait for a time out of 25 seconds.
- Note down the IP settings in a document, because there is no back-up for this setting.

4.11.6 Set IP settings to default

From the previous setting it is possible to enter the option to change all IP-settings to default values.

- In the display the remark 'set to DEFAULT ??' is visible.
- If you don't want to do this just wait until the time out is expired.
  - If you want to set all settings to the default value, select SK4 to confirm.
  - Confirm again with SK4 (Save) to be sure to set all IP settings to default values.
    - IP address: 192.168.180.20
    - Gateway: 255.255.180.1
    - Subnet mask: 255.255.255.0
    - Port address: 10001
- Leaving this menu: press SK5 or wait for a time out of 25 seconds.



4.12 Testfunctions menu

This menu can be used without a Communication Server, to check if the DP6000-IP Converter can sent calls. By using a pager in monitoring mode, it is possible to receive the call.

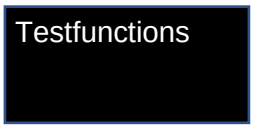
- Press SK1, three (3) times to navigate to the Testfunctions menu.
- Press SK4 one (1) time to enter the Testfunctions menu.
- A text 'Call 1411' appears; see example at the right.
  - Press SK4 to confirm.
  - The result is that a test call is transmitted:

Address	Bleep	Info	Message	Modeword
1411	B	98765	987654321ABC	40006

- If you press SK1, A text 'Call 1412' appears.
  - Press SK4 to confirm.
  - The result is that a test call is transmitted:

Address	Bleep	Info	Message	Modeword
1412	B	98765	987654321ABC	40006

- Leaving this menu: press SK5. (here is no time-out activated to leave the menu).



4.13 Software versions menu

The DP6000-IP Converter contains 2 µ-processors.
One µ-Processor 'L' and a µ-Processor 'R'.
To check the Firmware version loaded in both µ-processors proceed as follows:

- Press SK1, for (4) times to navigate to the 'SWversion' menu.
- Press SK4 one (1) time to confirm.
  - Data preceded with 'L' indicates the version and date of Processor 'L'.
  - Data preceded with 'R' indicates the version and date of Processor 'R'.
- Leaving this menu: press SK5 or wait for a time out of 25 seconds.

Note: The firmware in the Converter is spread over µ-Processor 'R' and 'L'.
One FW controls the communication with the external server while the other controls the applications. In this example the firmware version loaded in µ-Processor 'R' is 00.00.24.

Note: Next to the described function of SK5, SK5 and SK6 are used when a firmware update at the DP6000-IP Converter is carried out. Instructions will be given by IPS when relevant.

4.14 LED indications

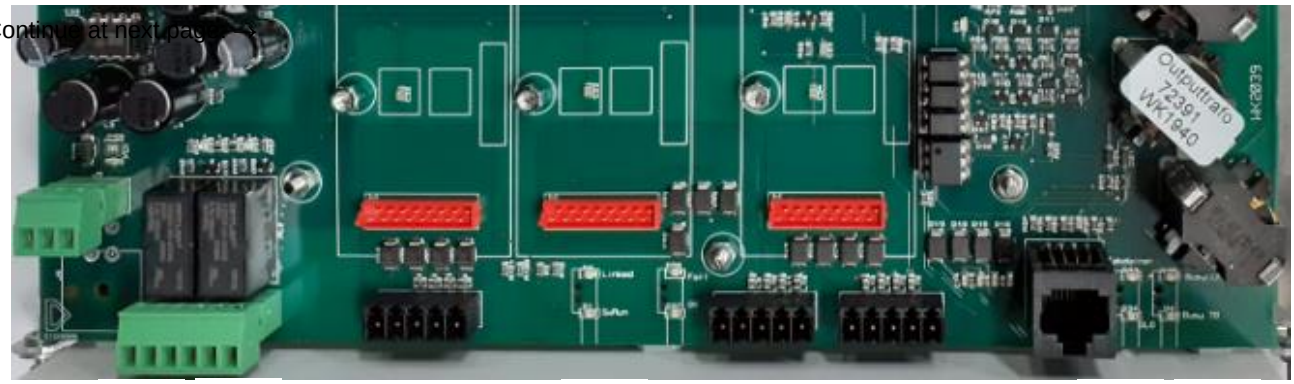
Several LEDs shows the status of the DP6000-IP Converter and installed (optional) modules.

4.14.1 LED indications; IP Converter module

LED ID	Function	Colour		Remark
n.a.	Show IP connection	Green		The green LED at the left on the IP connector lit continue to indicate that there is an IP-connection detected.
n.a.	Show IP communication	Yellow		A yellow LED at the right of the IP connector blinks when there is IP-DATA communication detected.
n.a.	Shows if there is IP data transmitted or received			The RED led at the IP interface module indicates that there is transmitted (TxD) data sent via the IP connection. The Green led at the IP interface module indicates that there is received (RxD) data coming from the IP connection.

4.14.1 LED indications DP6000-IP Converter

Continue at next page



D35 D37 D2 D1 D33 D34 D30 D6

LED ID	Function	Colour		Remark
D1	SW running	Blue		LED D1 is blinking when de firmware at the Converter is running.
D2	Linked	Yellow		LED D2 lit continue when connected with the server, blinking means that the Converter is waiting for a connection from the external server.
D6	Busy TB	Yellow		LED D6 is blinking when there is data detected at the Talk-back lines. OFF means no data detected. The TB function is Not implemented in this specialized product!
D30	Busy LF	Yellow		LED D30 lit when another encoder occupies the paging-lines.
D33	Take line	Red		Led D33 lit when the Converter is occupying the paging-lines.
D34	OLO	Blue		Led D34 lit when the Converter occupies the paging-lines.
D35	Status Re1	Blue		LED D35 lit when RE1 is activated.
D37	Status Re2	Blue		LED D37 lit when RE2 is activated.

4.15 Firmware version

The firmware versions of this special DP6000-IP Converter can be checked via the "Software versions" menu.
Another way to check the firmware version is to send a special command over the IP-network to the DP6000-IP Converter. This described in chapter "Send Firmware version request to the DP6000-IP Converter".

Note: Do not carry out firmware updates unless you are told by IPS to do so.

5 Using the Converter for the first time

The network connection is made with a RJ45 connector into the TCPIP socket of the converter. Once the connection is made, and the power is applied, the green LED on the socket should lit. More diagnostic info is found on the board.
By default the DP6000_IP Converter is set with DHCP enabled. This means that a DHCP server should provide an IP-address. The MAC address of the converter can be found using the LCD display on the converter. Also the IP address can be set manually using the switches.
The DP6000_IP Converter accepts connections by default on port 10001, in TCP mode.
After connecting to the DP6000_IP Converter, it will respond by sending: it's firmware version, as described in chapter "Send Firmware version request to the DP6000-IP Converter".

5.1 General remarks

All mentioned characters in this document are readable (ASCII) characters. To make reading of them easier, quotes are added. (i.e. '0'). This character is the same as ASCII 0x30 (30 hex).
Time-out: If there is no valid command received by the DP6000-IP Converter within 30 seconds, it will automatically disconnect. It is good practice to keep the connection open by sending a status request every 20 seconds.

5.2 Send a status request to the DP6000-IP Converter:

Send to the Converter:	
SOH	0x01
'I'	0x49
ENQ	0x05

The Converter response:		
SOH	0x01	
'i'	0x69	
STX	0x02	
'F'	0x46	
US	0x1F	
'0'	0x30/0x31	0 = LF line OK, 1 = LF line busy error.
'0'		to be defined
'0'		to be defined
'0'		to be defined
ETX	0x03	indicates end of transmission.

5.2.1 List of identifiers:

- F (0x46) is the identifier for the flags, which returns the status of the DP6000-IP Converter.
- The first returned value is the status of the LF line.
  - If the value is '0' (0x30) than the LF line is idle and OK.
  - If the value is '1' (0x30) than a timeout occurred on the LF line.
  - Timeout is set via SetupRecord.
- Further values can be defined as needed.

5.3 Send Firmware version request to the DP6000-IP Converter

Send to the Converter:	
SOH	0x01
'V'	0x56
ENQ	0x05

The Converter response:		
SOH	0x01	
'v'	0x76	
STX	0x02	
'V'	0x56	
US	0x1F	
	0x1F-0x7F	
Software Version Is Replied		
V0.00-05042018	for example	
ETX	0x03	indicates end of transmission.

5.3.1 List of identifiers:

- V (0x56) is the identifier for the version, which returns the software version of the IP box.

5.4 Send setup to DP6000-IP Converter

Send to the Converter:		
SOH	0x01	
'S'	0x53	
STX	0x02	
'L'	0x4C	identifier LF timeout
US	0x1F	
'0'-'9'		Time-out for LF-line, MSD
'0'-'9'		
'0'-'9'		Time-out for LF-line, LSD
RS	0x1E	
'P'	0x50	identifier Poll watch alarm
US	0x1F	
'0'-'9'		Poll watch alarm time, MSD
'0'-'9'		
'0'-'9'		Poll watch alarm time, LSD
RS	0x1E	
'C'	0x43	identifier Call-repeat
US	0x1F	
'0'-'9'		Number of transmissions of 1 call
RS	0x1E	
'E'	0x45	identifier for Priority
US	0x1F	
'0'-'9'		Encoder priority. See table on next page
'0'-'9'		
RS	0x1E	
'F'	0x46	identifier for Free paging line
US	0x1F	
'0'-'2'		Level when line is assumed free.
RS	0x1E	
'S'	0x53	identifier for Sequence
US	0x1F	
'0'-'1'		Enable sequence ('1') or not ('0')
ETX	0x03	indicates end of transmission.

5.5 Send setup to DP6000-IP Converter (Continued)

If the message is recognized and setup correctly, the Converter response:

SOH	0x01
's'	0x73
ACK	0x06

If the data is not recognized, or invalid, the Converter response:

SOH	0x01
's'	0x73
NACK	0x15

5.5.1 List of identifiers:

- L LF timeout (3 digits) indicating the LF timeout before an alarm flag is raised. Set to 0 if not used.
- P Poll timer. If the unit is not polled within the given time, than an alarm is send to the pager indicated below.

5.5.2 DP6000 specific settings

- C Call repeat value.
  If a call is send via the DP6000 bus, it can be repeated multiple times. This is used for example in situations where there is RF levels are reaching minimums. Thus giving better reachability of the pagers. If the pager receives only one of the two frames, it will use best effort to detect the data out of both transmissions.
  The Call repeat value can be set from '1' to '9'. It can be set here (mandatory for all calls) or send in the data when generating a call, so for 1 specific call the call repeat can be set higher than normal.
- E Encoder priority level.
  Each encoder using the DP6000 bus continuously monitors the DP6000 line. When a call needs to be send out, the converter monitors the DP6000 line to be free (* see identifier F also) for a specific period. This period is 35 millisecs times the value given in E. So a level of 5, gives 5 times 35 milliseconds detection time of 175 milliseconds. If another encoder uses a level of 3, than that encoder will occupy the DP6000 line after 3 * 35 msec = 105 milliseconds, and the converter with a priority level of 5 will wait.
- F Free line level
  The converter monitors the DP6000 line, and detects it's level. By default the converter looks for a free line to send the call. If the line is in use for speech no call is send. It is also possible (by ignoring the speech-line DP6000 level) to send a DP6000 code call 'over' this call. The user will hear the DP6000 call for a short period, and the alerted pager will also respond. In that case the Free line level setup is not 'free' but should be set to 'Speech'.

Line status	Voltage level	Free line level indicator
Free	-30V	0
Speech	-15V	1
Priority	-7V	2

- S Sequence
  The converter can send the calls in a sequence mode, needed when a sequencing unit is used. If the call repeat is set to '4' and sequencing is enabled, than the calls are send in 2 packages of 2 calls. With a small interval in between. This provides the sequencer unit enough time to change the enabled transmitters.

Sequencing not used	'0'
Sequencing used	'1'

5.6 Request setup from Converter

Send to the Converter:

SOH	0x01
'S'	0x53
ENQ	0x05

The converter response:

SOH	0x01	
's'	0x73	
STX	0x02	
'L'	0x4C	identifier LF timeout
US	0x1F	
'0'-'9'		Time-out for LF-line, MSD
'0'-'9'		
'0'-'9'		Time-out for LF-line, LSD
RS	0x1E	
'P'	0x50	identifier Poll watch alarm
US	0x1F	
'0'-'9'		Poll watch alarm time, MSD
'0'-'9'		
'0'-'9'		Poll watch alarm time, LSD
RS	0x1E	
'C'	0x43	identifier Call-repeat
US	0x1F	
'0'-'9'		Number of transmissions of 1 call
RS	0x1E	
'E'	0x44	identifier for Priority
US	0x1F	
'0'-'9'		Encoder priority. See table on next page
'0'-'9'		
RS	0x1E	
'F'	0x45	identifier for Free paging line
US	0x1F	
'0'-'2'		Level when line is assumed free.
RS	0x1E	
'S'	0x44	identifier for Sequence
US	0x1F	
'0'-'1'		Enable sequence ('1') or not ('0')
ETX	0x03	indicates end of transmission.

5.6.1 List of identifiers:

Refer to the previous page for the description.

5.7 Sent call to DP6000 bus line

A paging call is always send to the paging bus using the LF lines.
Technical there is no other way at this moment to send a message to a pager, other than using the LF lines.

Send to the Converter:		
SOH	0x01	
'T'	0x54	Transmit a call
STX	0x02	
'A'	0x41	identifier ADDRESS
US	0x1F	
'0'-'9'/'A'-'F'		Address of pager, 4 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'B'	0x42	identifier BLEEP
US	0x1F	
'0'-'9'/'A'-'F'		Bleep code, 1 digit
RS	0x1E	
'N'	0x4E	identifier NUMERICAL info
US	0x1F	
'0'-'9'/'A'-'F'		Numerical info, 5 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'M'	0x4D	identifier Message text
US	0x1F	
'0'	0x1F-0x7F	text info, length max 96 characters.
RS	0x1E	
'W'	0x57	identifier ModeWord1
US	0x1F	
'0'-'9'/'A'-'F'		ModeWord1, 5 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'X'	0x58	identifier ModeWord2
US	0x1F	
'0'-'9'/'A'-'F'		ModeWord1, 5 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'C'	0x43	identifier Call-repeat
US	0x1F	
'0'-'9'		Number of call repeats for this call
ETX	0x03	indicates end of transmission.

It is not needed to send all information (identifiers) to make a call. The only items needed are address and bleep.
All other identifiers are not used, or automatically added by the converter if needed.

5.7.1 Identifiers:

- A Is the address of the pager
- B Is the bleep code for the paging call
- N Is the numerical info of the paging call.
- M Is the alphanumerical message for the paging call, in clear text format (readable characters only)
- m Is the alphanumerical message for the paging call in hex format (00-FF), so 414243 results in ABC.
- W Is the ModeWord 1 for the paging call
- X Is the ModeWord 2 for the paging call.
- S Is the Number of call repeats for this call, overruling the general setting.

Please note that the ModeWord1 and ModeWord2 might be changed as needed. For example if the Message should be send, but invalid ModeWords are provided (not indicating the Message length) the converter will set them to the correct ModeWord, leaving other bits in the ModeWord intact.

Once the call is sent to the converter, it will respond with a frame shown at next page if the received data is valid.
If the received frame is invalid or corrupt, the converter will respond with a **NACK** (0x15)only.

5.8 Send call to DP6000 LF line

The Converter response:		
Send to the Converter:		
SOH	0x01	
't'	0x74	Transmit a call
STX	0x02	
'A'	0x41	identifier ADDRESS
US	0x1F	
'0'-'9'/'A'-'F'		Address of pager, 4 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'B'	0x42	identifier BLEEP
US	0x1F	
'0'-'9'/'A'-'F'		Bleep code, 1 digit
RS	0x1E	
'N'	0x4E	identifier NUMERICAL info
US	0x1F	
'0'-'9'/'A'-'F'		Numerical info, 5 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'M'	0x4D	identifier Message text
US	0x1F	
'0'	0x1F-0x7F	text info, length max 96 characters.
RS	0x1E	
'W'	0x57	identifier ModeWord1
US	0x1F	
'0'-'9'/'A'-'F'		ModeWord1, 5 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'X'	0x58	identifier ModeWord2
US	0x1F	
'0'-'9'/'A'-'F'		ModeWord1, 5 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'C'	0x43	identifier Call-repeat
US	0x1F	
'0'-'9'		Number of call repeats for this call
RS	0x1E	
'S'	0x53	identifier for Status
US	0x1F	
'Q'	0x51	Status of the call Q = in Queue.
ETX	0x03	indicates end of transmission.

After receiving the call, the converter will respond the call with the status Queue. It means the call is in Queue, and send when possible. Once the call is send, the converter replies a second SOH 't' frame with the status of the call.

5.8.1 Identifiers:

- A Is the address of the pager
- B Is the bleep code for the paging call
- N Is the numerical info of the paging call.
- M Is the alphanumerical message for the paging call, in clear text format (readable characters only)
- m Is the alphanumerical message for the paging call in hex format (00-FF), so 414243 results in ABC.
- W Is the ModeWord 1 for the paging call
- X Is the ModeWord 2 for the paging call.
- S Is the status of the call (described below).
- C The number of call repeats (if set at sending call)

Value	Status
'Q'	Queue
'P	'Paged (pager is called)
'A'	Absent (pager is in the charging rack)
'T'	Terminated. Illegal number
'E'	Error, no DPbus available to send call.

5.9 Receive call from DP6000 line

The Converter response:

Send to the Converter:

SOH	0x01	
'r'	0x74	Receive a call
STX	0x02	
'A'	0x41	identifier ADDRESS
US	0x1F	
'0'-'9'/'A'-'F'		Address of pager, 4 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'B'	0x42	identifier BLEEP
US	0x1F	
'0'-'9'/'A'-'F'		Bleep code, 1 digit
RS	0x1E	
'N'	0x4E	identifier NUMERICAL info
US	0x1F	
'0'-'9'/'A'-'F'		Numerical info, 5 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'M'	0x4D	identifier Message text
US	0x1F	
'0'	0x1F-0x7F	text info, length max 96 characters.
RS	0x1E	
'W'	0x57	identifier ModeWord1
US	0x1F	
'0'-'9'/'A'-'F'		ModeWord1, 5 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'X'	0x58	identifier ModeWord2
US	0x1F	
'0'-'9'/'A'-'F'		ModeWord1, 5 digits
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
'0'-'9'/'A'-'F'		
RS	0x1E	
'L'	0x4C	identifier for Line which the call was received from
US	0x1F	
'L'	0x4C	L = LF line.
RS	0x1E	
'S'	0x53	identifier for Status
US	0x1F	
'P'	0x51	Status of the call P = Paged.
ETX	0x03	indicates end of transmission.

5.9.1 Identifiers:

- A Is the address of the pager
- B Is the bleep code for the paging call
- N Is the numerical info of the paging call.
- M Is the alphanumerical message for the paging call.
  If the received call contains only readable characters, the 'M' identifier is used.
- m Is the alphanumerical message for the paging call in hex format.
  If the received call contains a character below 0x20 or above 0x7F 'm' identifier is used, transferring the entire received message in hex format.
- W Is the ModeWord 1 for the paging call
- X Is the ModeWord 2 for the paging call.
- S Is the status of the call (normally paged).
- L Is the line where the call was received.
  'L' indicates that the call is received from the LF line.

International Pager Services B.V.
Willem de Haasstraat 5
5421 TN Gemert
The Netherlands
https://www.pagerservices.nl