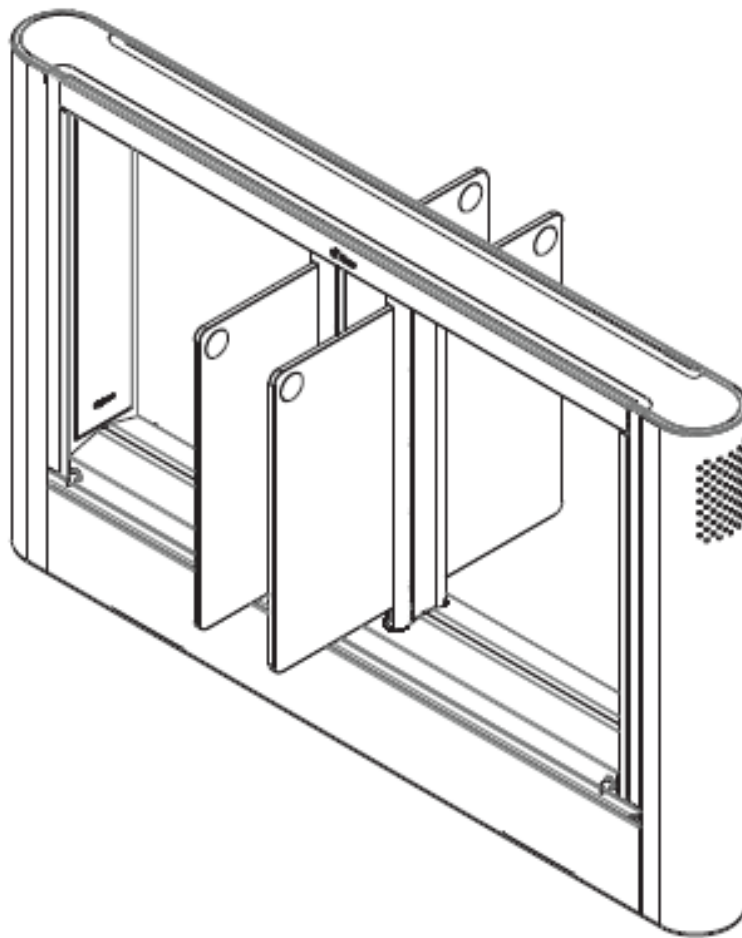

d'Flow G4



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1. Guidelines

Please read the information carefully before using the product, as this will ensure the correct use of the equipment and the maximum utilization of its technical resources, as well as prolonging its lifespan. Keep this manual for future reference. Digicon reserves the right to modify the characteristics of its products at any time to adapt them to the latest technological developments. Digicon also reserves the right to alter the information contained in this manual without prior notification. Digicon does not provide any contractual warranty regarding the information contained in this manual and cannot be held responsible for any errors it may contain or for problems caused by its use. The information contained in this manual is the exclusive property of Digicon and is protected by copyright law. This manual may not be reproduced, photocopied, or translated, in whole or in part, in any type of media, without written authorization from Digicon.

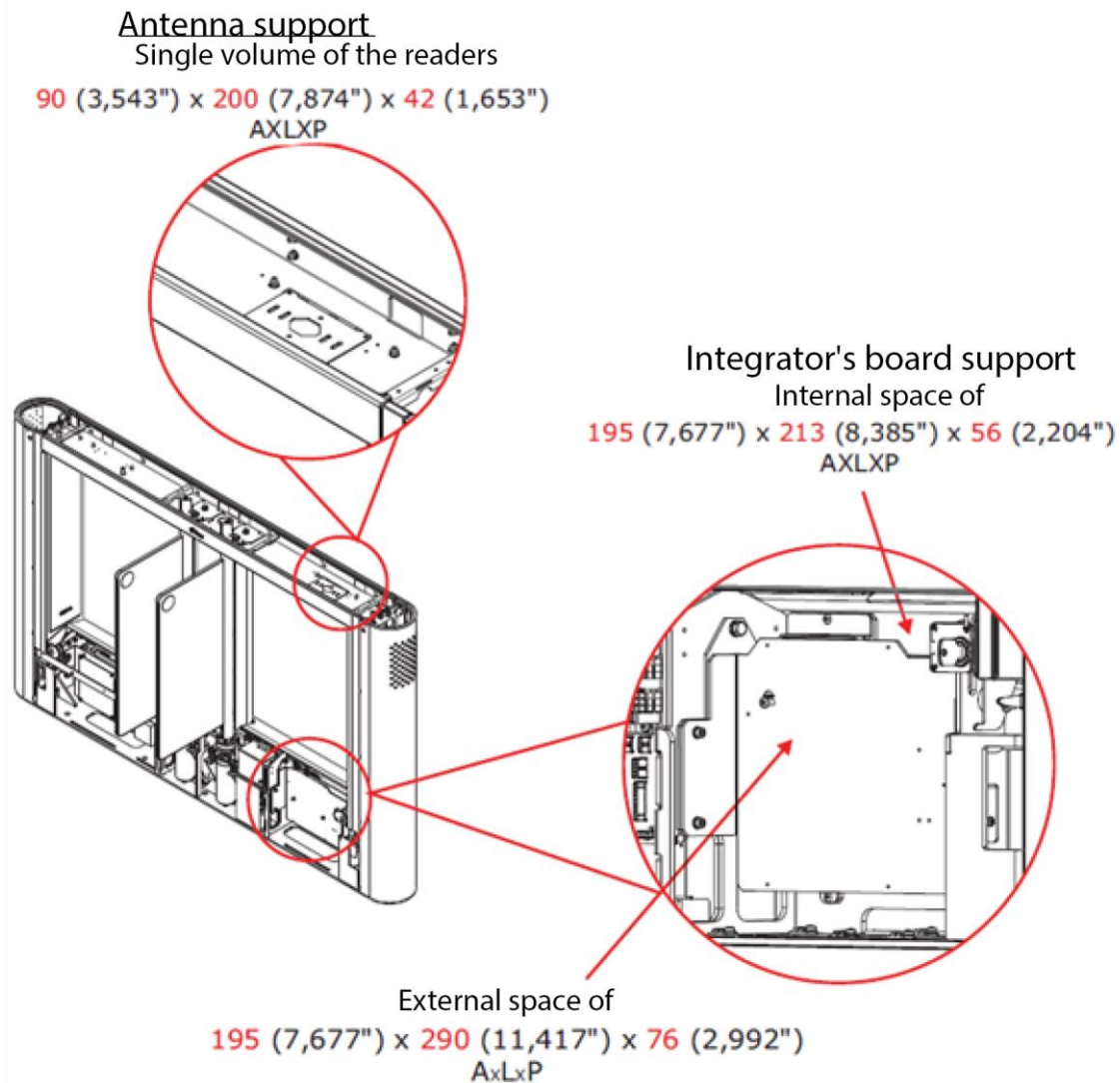
2. Introduction

Recognizing the crucial role integrators play in the dFlow equipment, technical, mechanical, and electronic information has been compiled to streamline the access control integration process. This manual will cover methods of attachment, connection, and configuration in a detailed and illustrative manner.



3. General Information

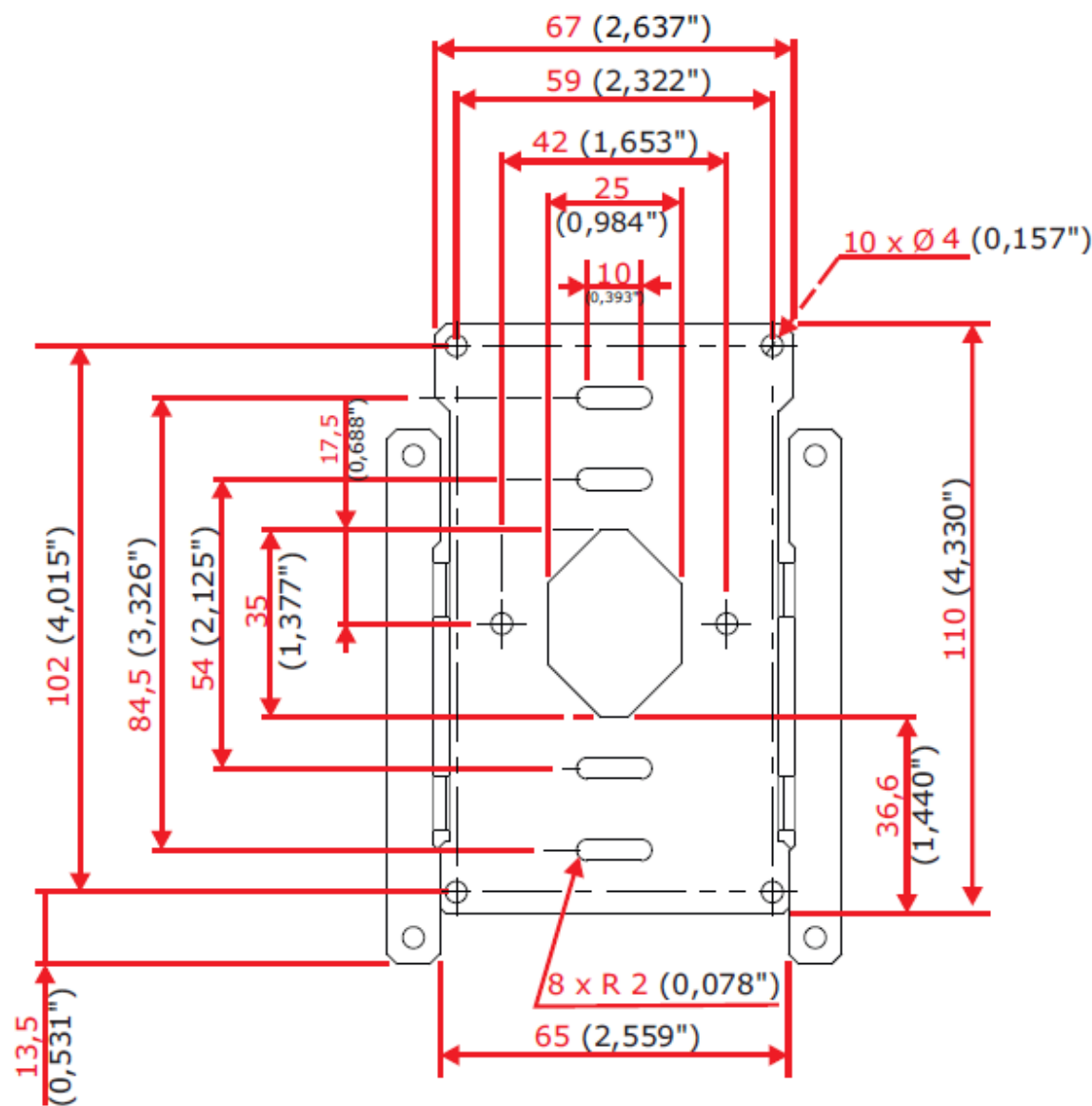
3.1. Dimensions



Total space (internal + external) of 195 mm (7.677 inches) x 213 mm (8.385 inches) x 132 mm (5.196 inches) without intermediate tray.

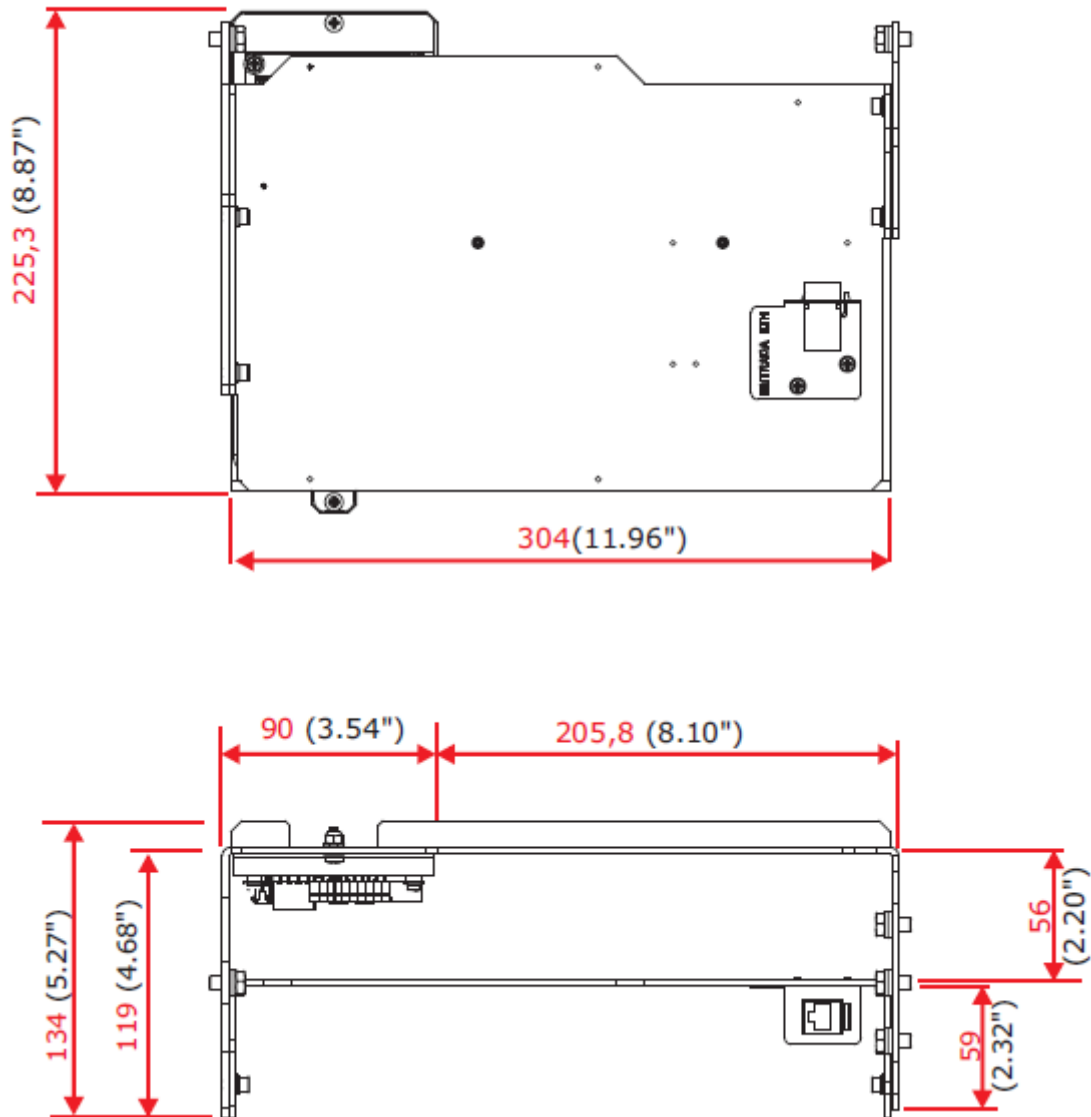
3.2. Mounting Points and Measurements

3.2.1. Antenna Bracket



⚠ ATTENTION! Measurements are illustrated in millimeters and (inches).

3.2.2. Integrator Plate Bracket



3.3. Power Supply for the Controller Device

The power supply must comply with the same parameters as the equipment (127-220V) to be connected to the internal terminals. Any adaptation required for power supply (plugs, connectors, and cables) is the responsibility of the integrating partner.

4. Interfaces with dFlow

The dFlow has two interface methods for integrators, namely:

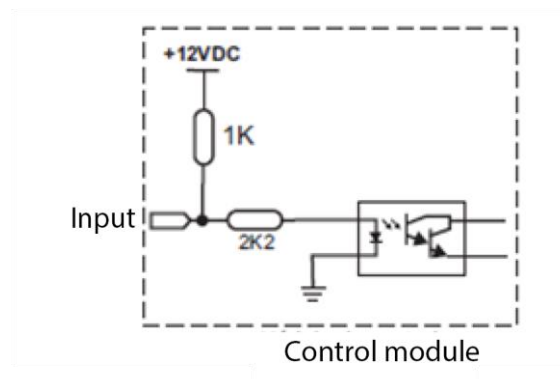
- Digital signals or dry contacts, described in Chapter 4.1.
- TCP/IP protocol via Ethernet interface, described in Chapter 4.2.

4.1. Interface via signal

This interface can be triggered by digital signals. The most common examples in this case are activations via transistor and relay (dry contact).

4.1.1. Input Drive Circuit

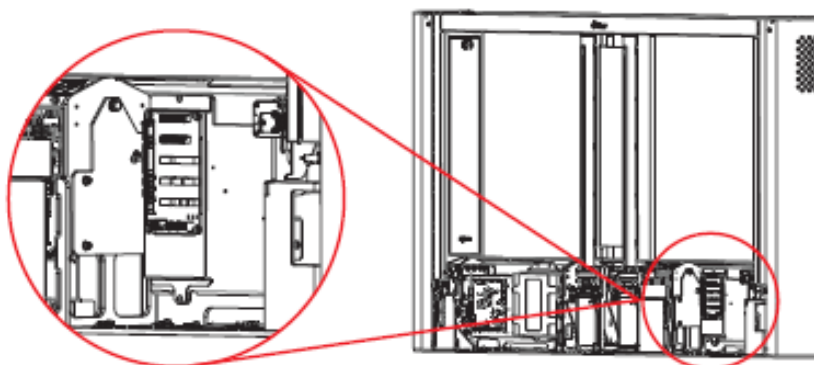
The circuit below describes how the input drive signal from the dFlow module is read.



4.1.2. Integrator Board

On the Integrator Board, the signals provided by the equipment for controlling the integrator interface are available.

We can locate it fixed on a plate in the area reserved for integrators, as illustrated in the image below:



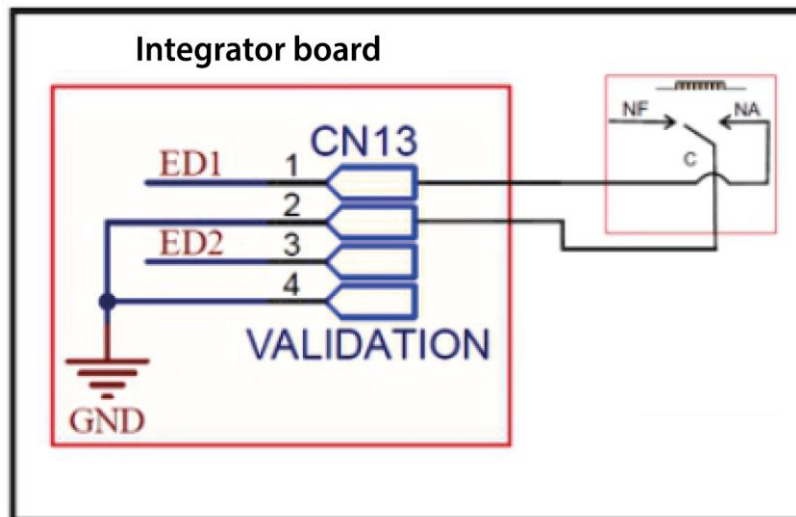
Connector	Description	Pin Number	Characteristics							
CN13	Enables entrance passage	Pin 1 = Input	This connector has two functionalities: 1) If this terminal is activated by a pulse >100ms, passage in the entrance direction is enabled. 2) If the voltage level remains low (0V) at this connector for more than 1s, the dFlow assumes the behavior of leaving this passage direction open, meaning the user no longer needs to validate their passage.							
		Pin 2 = GND								
	Enables exit passage	Pin 3 = Input	This connector has two functionalities: 1) If this terminal is activated by a pulse >100ms, passage in the exit direction is enabled; 2) If the voltage level remains low (0V) at this connector for more than 1s, the dFlow assumes the behavior of leaving this passage direction open, meaning the user no longer needs to validate their passage..							
		Pin 4 = GND								
			Color of operation LEDs in the entrance direction When enabling passage in the entrance direction, the color that the operation LEDs will illuminate can be selected, as follows.							
CN14	LED entrance		Green	Yellow	Blue	Orange	Light Blue	White	Purple	Pink
		Pin 1	0	1	0	1	0	1	0	1
		Pin 2	0	0	1	1	0	0	1	1
		Pin 3	0	0	0	0	1	1	1	1
			Color of operation LEDs in the exit direction When enabling passage in the exit direction, the color that the operation LEDs will illuminate can be selected, as follows.							
CN15	LED exit		Green	Yellow	Blue	Orange	Light Blue	White	Purple	Pink
		Pin 1	0	1	0	1	0	1	0	1
		Pin 2	0	0	1	1	0	0	1	1
		Pin 3	0	0	0	0	1	1	1	1
CN16	Input alert signal	Pin 1= Input	While pin 1 is at a low voltage level (0V), the red operation LED will be activated.							
		Pin 2 = GND								
	Output alert signal	Pin 3 = Input	While pin 3 is at a low voltage level (0V), the red operation LED will be activated.							
		Pin 4 = GND								
CN18	Input closure	Pin 1= Input	If the voltage level remains low (0V) on pin 1, the entry guidance LEDs light up in red, and the dFlow ignores any passage enable signal in the input direction, meaning it disregards any signal generated on pin 1 of connector CN13.							
		Pin 2 = GND								
	Output closure	Pin 3 = Input	If the voltage level remains low (0V) on pin 3, the exit guidance LEDs light up in red, and the dFlow ignores any passage enable signal in the output direction, meaning it disregards any signal generated on pin 3 of connector CN13.							
		Pin 4 = GND								
	Emergency signal	Pin 5 = Input	The equipment will enter an emergency state, releasing the doors for evacuation.							
		Pin 6 = GND								
	Generic input	Pin 7 = Input Pin 8 = GND	Input available but not yet implemented.							
		Pin 9 = Input Pin10 = GND	Available input not yet implemented.							

Connector	Description	Pin Number	Characteristics
CN19	Generic input	Pin 1 = Input	Available input not yet implemented
		Pin 2 = GND	
		Pin 3 = Input	Input available but not yet implemented
		Pin 4 = GND	
		Pin 5 = Input	Available input not yet implemented
		Pin 6 = GND	
		Pin 7 = Input	Input available but not yet implemented
		Pin 8 = GND	
		Pin 9 = input	Available input not yet implemented
		Pin 10 = GND	
CN10	VCC	Pin 1 = Input	12VDC Power Supply
		Pin 2 = GND	
CN11	VCC	Pin 1 = 12V	12VDC Power Supply
		Pin 2 = GND	
CN12	VCC	Pin 1 = 12V	12VDC Power Supply
		Pin 2 = GND	
CN9	Generic output	Pin 1 = 12V	Output available but not yet implemented
		Pin 2 = Output	
		Pin 3 = 12V	Output available but not yet implemented
		Pin 4 = Output	
CN17	Entrance passage return	Pin 3 = Output	This connector generates a signal when the user performs a passage in the entrance direction. (As per 5.1.5)
		Pin 4 = GND	
	Exit passage return	Pin 1 = Output	This connector generates a signal when the user performs a passage in the exit direction. (As per 5.1.6)
		Pin 2 = GND	
	Invalid entry passage return	Pin 7 = Output	This connector generates a signal when an invalid user performs a passage in the entrance direction. (As per 5.1.7)
		Pin 8 = GND	
	Invalid exit passage return	Pin 5 = Output	This connector generates a signal when an invalid user performs a passage in the exit direction. (As per 5.1.8)

4.1.3. Dry Contact Activation

To enable one of the integrator board inputs via dry contact, the connection must be made to the connector as shown in the example below:

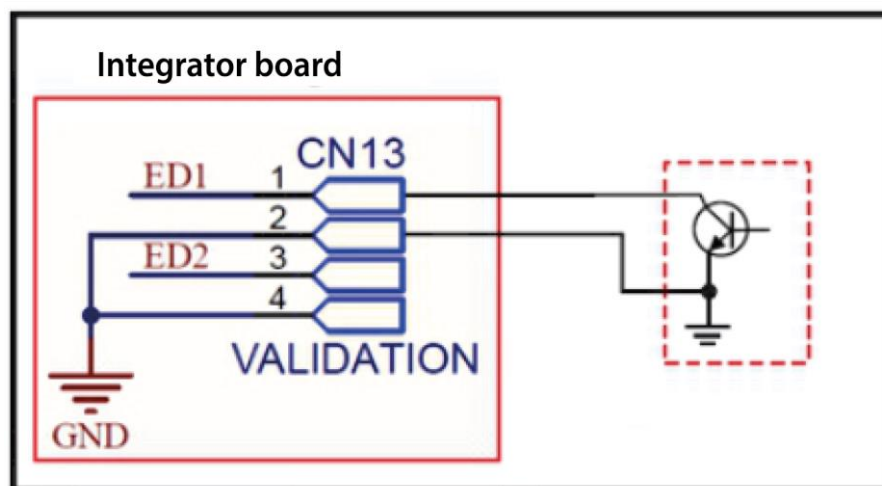
Example: Circuit connected to the input passage enable connector.



4.1.4. Transistor (NPN) Activation

To enable one of the integrator board inputs using a transistor output (open collector), the connection must be made as shown in the example below:

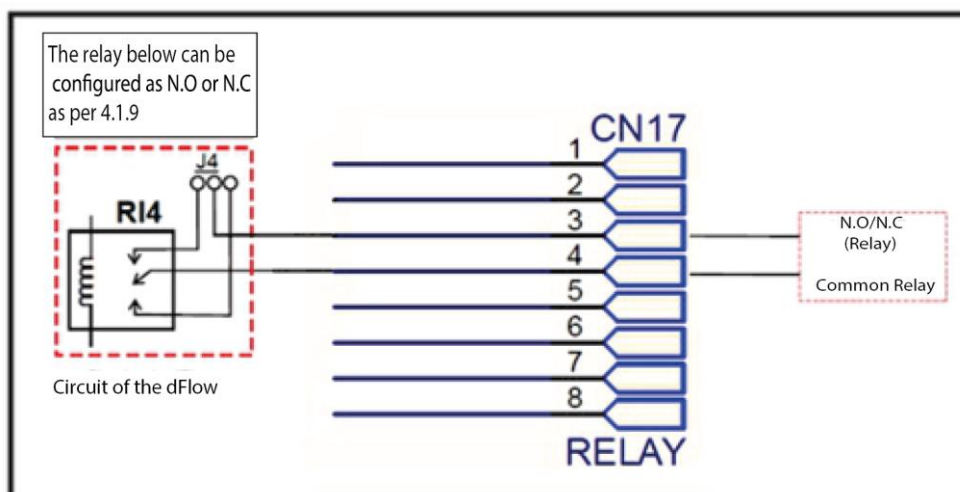
Example: Circuit connected to the input passage enable connector.



4.1.5. Return of passage in the entrance direction

Pins 3 and 4 of the CN17 connector on the integrator board are connected to a relay that is activated when a complete passage occurs through the equipment.

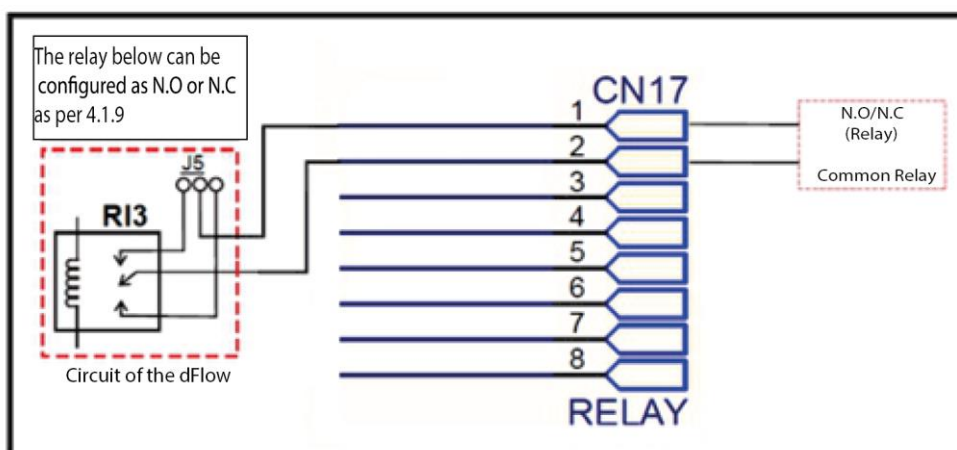
The drawing below illustrates how the integrator should use this connector:



4.1.6. Return of passage in the exit direction

Pins 1 and 2 of the CN17 connector on the integrator board are connected to a relay that is activated when a complete passage occurs through the equipment.

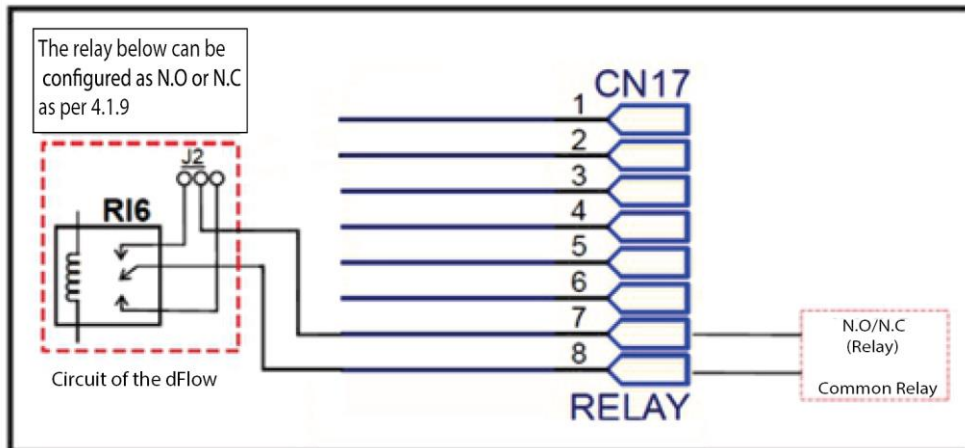
The drawing below illustrates how the integrator should use this connector:



4.1.7. Return of invalid passage in the entrance direction

Pins 7 and 8 of the CN17 connector on the integrator board are connected to a relay that is activated when a complete passage occurs through the equipment.

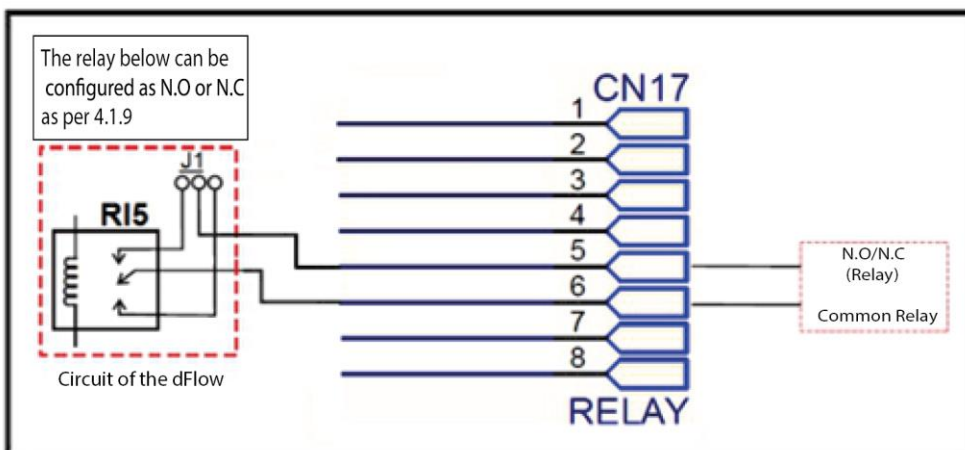
The drawing below illustrates how the integrator should use this connector:



4.1.8. Return of invalid passage in the exit direction

Pins 5 and 6 of the CN17 connector on the integrator board are connected to a relay that is activated when a complete passage occurs through the equipment.

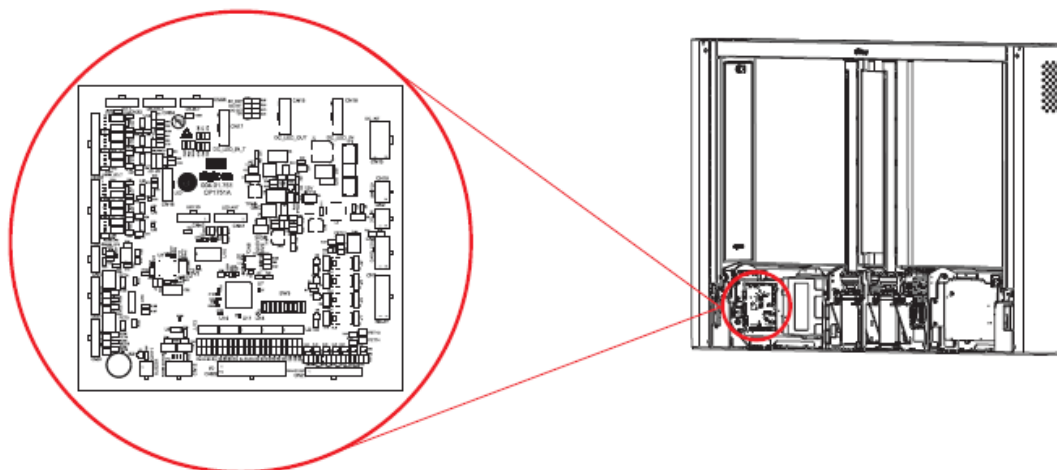
The drawing below illustrates how the integrator should use this connector:



4.1.9. Relay Jumper Configuration

To configure the relays from NO to NC, follow the procedures below:

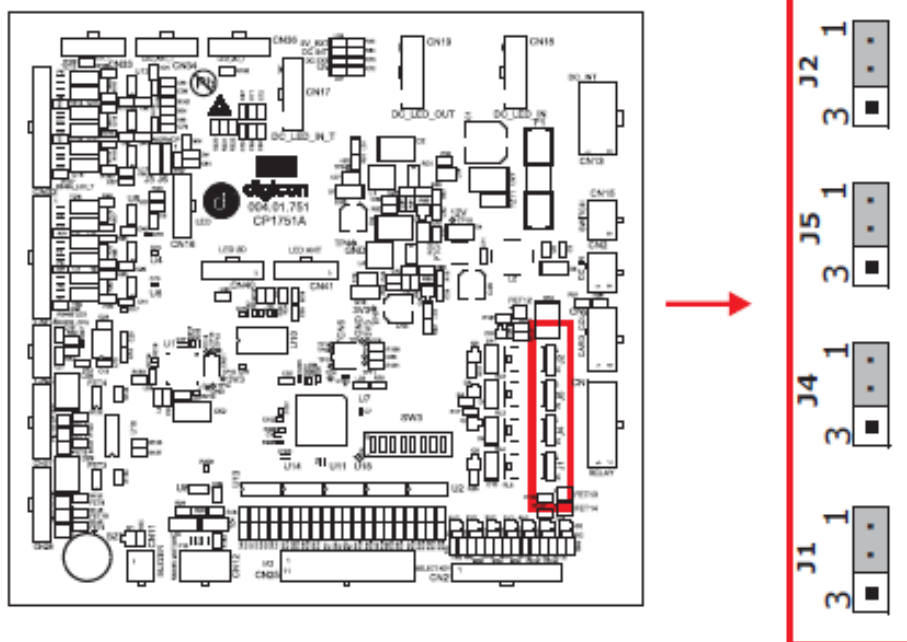
Open the access cover to the dFlow panel and locate the control board.



Locate jumpers J1, J2, J3, and J4 on the control board.

To configure NO (Normally Open): Place the jumper between pins 1 and 2.

To configure NC (Normally Closed): Place the jumper between pins 2 and 3.



4.2. TCP/IP Interface

The dFlow has a server with access port 9006, through which the integrator can communicate with the equipment. This section describes the macro definitions that describe the operation of this protocol.

4.2.1. Protocol Revision Encoding

The version numbering is divided into four parts (A. B. C. D), as described in the table below:

A. Product Identification: This field identifies the type of product in question, in this case, 18 - dFlow Protocol.

B. Generation/Protocol: Incremented when the new version (product generation or architecture) breaks compatibility with the previous one.

C. Update/Functional: Incremented when there are new implementations/functional updates without loss of compatibility with the previous version.

D. Bugs: Incremented when there are bug fixes.

4.2.2. Architecture

TCP/IP communication with asynchronous characteristic, featuring two (2) communication channels.

Channel 1 will operate for sending commands.

Channel 2 will operate for receiving events.

All numerical data presented (Int and Short) follows the Little Endian notation.

4.2.3. Standard Message Structure

All communication between Integrator <-> dFlow has a standard header, described below.

Bytes	Data Type	Value	Parameter Description
1	Byte	MSG_ID	Message Code/Type: 0x01(01) - Authenticate 0x02(02) - ExecuteAccess 0x03(03) - SendEvent 0x04(04) - ReturnCommand
1	Byte	0x06	Header Size in Bytes
4	Int		Command Generation date on the device (number of seconds elapsed since 1970)
2	Short	PayLoad_Len	Number of bytes in the return data block..
N	Byte	PayLoad	Return data block.

4.2.4. Standard Command Sending Structure

Bytes	Data Type	Value	Parameter Description
1	Byte	0xXX	Command Identifier
1	Byte	0x06	Header size
4	Int		Command Generation date on the device (number of seconds elapsed since 1970–01-01 00:00:00 local time)
2	Short	PayLoad_Len	Number of bytes of command data

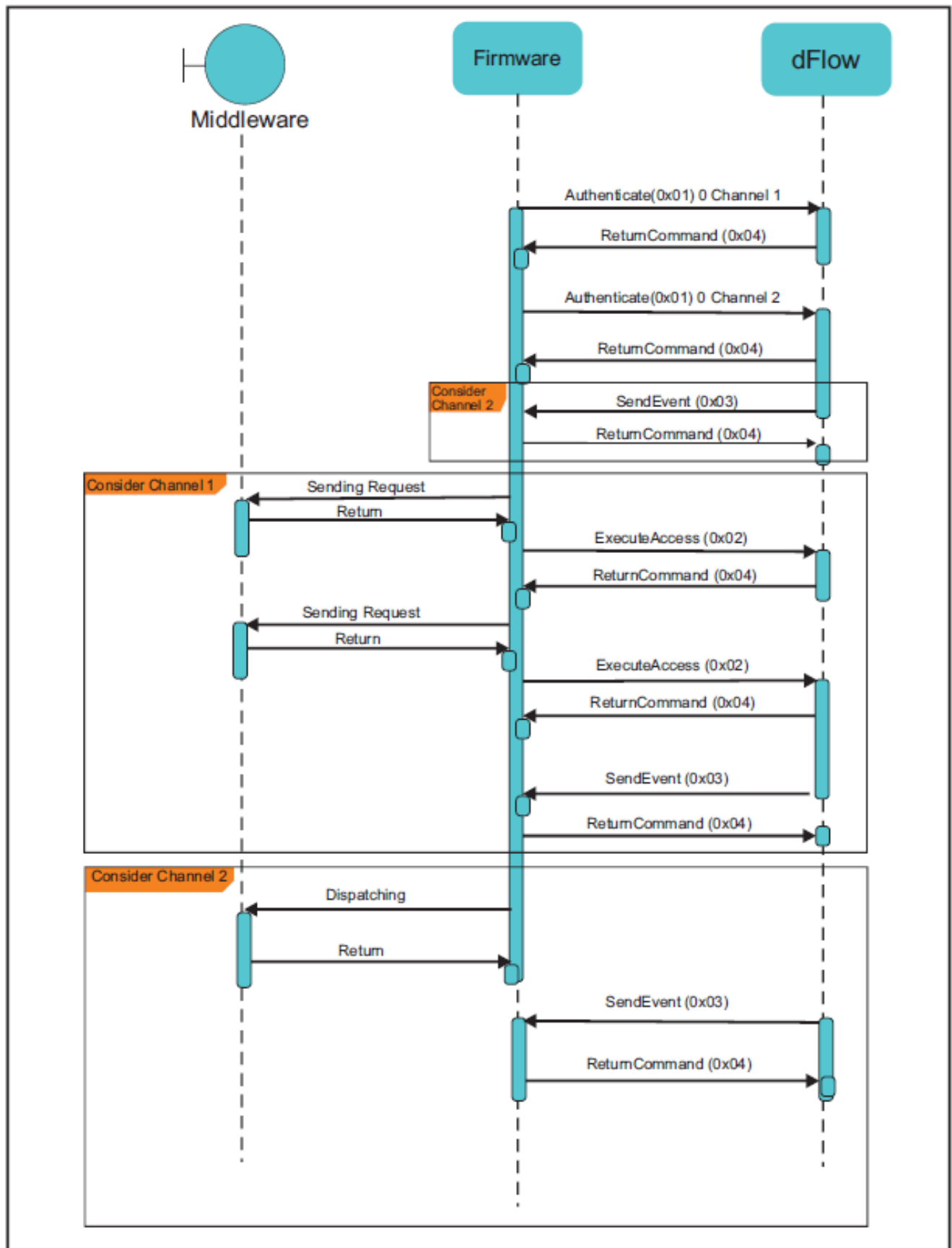
4.2.5. Standard Command Return Structure

All command response communication, dFlow -> Integrator, has a standard header, described below:

Bytes	Data Type	Value	Parameter Description
1	Byte	0xXX	Command Identifier
1	Byte	0x06	Header size
4	Int		Command Generation date on the device (number of seconds elapsed since 1970–01-01 00:00:00 local time)
2	Short		Number of bytes of return data
1	Byte		Return code, see Return Code Table
XX	Byte		Return data

4.2.6. Communication Diagram

Below is the communication sequence diagram between the Integrator and the dFlow Blockage Server. The Middleware represents the application with business rules for access validation. This application interacts as the integrator while the dFlow acts as the server.



4.2.7. Commands

4.2.7.1. Authenticate

The authenticate command must be the first to be sent by the Digicon Access Firmware to the server. After the dFlow connection is ESTABLISH (established), it will be necessary to authenticate both channels.

Authenticate			
Bytes	Type	Value	Parameter Description
1	Byte	0x01	Command identifier
1	Byte	0x06	Header size
4	Int		Command generation date on the device (number of seconds elapsed since 1970)
2	Short		Number of bytes of command data
4	Int		Device ID [Digicon Access Firmware]
1	Byte		Channel ID
4	Int		Connection Timeout (in milliseconds)
4	Int		Protocol version in use by the device.

Authenticate			
Bytes	Type	Value	Parameter Description
1	Byte	0x01	Command Identifier
1	Byte	0x06	Header Size
4	Int		Command Generation Date on the Device (number of seconds elapsed since 1970)
2	Short		Number of bytes of return data
1	Byte		Return code, see Return Code Table
4	Int		Protocol version in use by dFlow

4.2.7.2. *KeepAlive*

The keepAlive command originates from the dFlow server to the clients connected to it. This command is used to keep the connection active with the clients.

keepAlive			
Bytes	Type	Value	Parameter Description
1	Byte	0x03	Command Identifier
1	Byte	0x06	Header Size
4	Int		Command generation date on the device (number of seconds elapsed since 1970)
2	Short	0x00	Number of bytes of command data

ReturnCommand			
Bytes	Type	Value	Parameter Description
1	Byte	0x03	Command Identifier
2	Short	0x06	Header Size
4	Int		Command generation date on the device (number of seconds elapsed since 1970)
2	Short		Number of bytes of return data
1	Byte		Return code, see Return Code Table.

4.2.7.3. *ExecuteAccess*

The *ExecuteAccess* command is sent by the Digicon Access Firmware through channel 1 to the dFlow when there is any identified access on the readers, card, person, or document.

ExecuteAccess			
Bytes	Type	Value	Parameter Description
1	Byte	0x02	Command Identifier
1	Byte	0x06	Header Size
4	Int		Command generation date on the device (number of seconds elapsed since 1970)
2	Short		Number of bytes of command data
1	Byte		Event online/offline (0=offline, 1=online)
1	Byte		Reader ID
1	Byte		Identifier Type [1=card, 2=person, 3=documents]
23	Byte		If identifier type = 1, the first 5 bytes represent the identifier, and the remaining bytes should be read and discarded, they will be zeroed out. If identifier type = 2, the 23 bytes will be filled. If identifier type = 3, use up to 5 bytes like a card.
1	Byte		Card level
1	Byte		Access credit range that was decremented
1	Byte		Message quantities
1	Byte		Access type: For valid access, follow TABLE 3, and assume other values as denied.
1	Byte		Access direction [1=entry, 2=exit]
1	Byte		Color activation: table 2
16	Byte		Display: 1st line
16	Byte		Display: 2nd line
1	Byte		Number of triggers
1	Byte		Trigger type. [1 = access, 2 = buzzer, 3 = display]
4	Int		Trigger duration

ReturnCommand			
Bytes	Type	Value	Parameter Description
1	Byte	0x04	Command identifier
2	Short	0x06	Header size
4	Int		Command generation date on the device (number of seconds elapsed since 1970)
2	Short		Number of bytes of return data
1	Byte		Return code, see Return Code Table

4.2.7.4. *SendEvent*

The SendEvent is an event upload command that will be sent from the dFlow server to the Integrator.

SendEvent			
Bytes	Type	Value	Parameter Description
1	Byte	0x03	Command identifier
1	Byte	0x06	Header size
4	Int		Command generation time on the device (number of seconds since 1970)
2	Short	XX	Number of bytes of command data. If this field is zero (0x0000), it will function as a keepAlive; if different from zero, it represents a valid event.
4	Int		Entry date (number of seconds since 1970)
4	Int		Exit date (number of seconds since 1970)
1	Byte		Event online/offline (0=offline, 1=online)
1	Byte		Reader ID
1	Byte		Identifier Type [1=card, 2=person, 3=documents]
23	Byte		If type = 1, Card, the first 5 bytes represent the identifier, and the remaining bytes should be read and discarded, they will be zeroed out. If type = 2, Person, the 23 bytes will be filled. If type = 3, Document, use up to 5 bytes like Card.
1	Byte		Card level
1	Byte		Range of access credits that was decremented
1	Byte		Quantity of messages
1	Byte		Access type or status event (alarms), return the access type field and status of the Executeaccess command.
1	Byte		Access direction [1=entry, 2=exit]
1	Byte		dFlow identification ID
9	Byte		Code of up to 9 (nine) status occurrences as per the table

ReturnCommand			
Bytes	Type	Value	Parameter Description
1	Byte	0x04	Command identifier
2	Short	0x06	Header size
4	Int		Command generation time on the device (number of seconds elapsed since 1970)
2	Short		Number of bytes of return data
1	Byte		Return code, see return code table

4.2.8. Example

Here's an example of the sequence of commands exchanged between the Integrator controller and the dFlow server.

Start the authentication process for both clients.

Authenticate 1:

Client 1 sends authentication.

Device ID [Integrator] 5

Channel ID 1

Connection timeout (in milliseconds): 10

Protocol version currently in use by the device: 18.1.3.0

Hexadecimal Frame:

0x01 0x06 0xb3 0xf6 0x00 0x58 0x0d 0x00 0x05 0x00 0x00 0x00 0x01 0x0a
0x00 0x00 0x00 0x12 0x01 0x03 0x00

Server sends authentication OK. Hexadecimal frame:

0x01 0x06 0xb3 0xf6 0x00 0x58 0x04 0x00 0x00 0x12 0x01 0x03 0x00

Authenticate 2:

Client 2 sends authentication

Device ID [Integrator] 5

Channel ID 2

Connection timeout (in milliseconds): 10

Protocol version currently in use by the device: 18.1.3.0

Hexadecimal frame:

0x01 0x06 0xb3 0xf6 0x00 0x58 0x0d 0x00 0x05 0x00 0x00 0x00 0x02 0x0a 0x00
0x00 0x00 0x12 0x01 0x03 0x00

Server sends authentication OK. Hexadecimal frame:

0x01 0x06 0xb3 0xf6 0x00 0x58 0x04 0x00 0x00 0x12 0x01 0x03 0x00

Loop begins keepAlive:

Server sends keepAlive.

Hexadecimal frame:

0x03 0x06 0xb8 0xf6 0x00 0x58 0x00 0x00

Client returns OK

Hexadecimal frame:

0x04 0x06 0xb8 0xf6 0x00 0x58 0x00 0x00 0x00

Execute access.

Client sends executeAccess Online/offline event: 0

Reader ID 2

Identifier Type 1

Value

Identifier [34][35][36][00][00][00][00][00][00][00][00][00][00][00][00][00][00][00][00][00]

Card Level 3

Access credit range that was decremented: 4

Message quantities: 2

Access type 1

Access direction 1

Color Trigger 53

Display 'DISPLAY 1'

Display 'DISPLAY 2'

Number of Triggers 3

Trigger Type 'n' triggers

Hexadecimal frame:

0x02 0x06 0xb9 0xf6 0x00 0x58 0x41 0x00 0x00 0x02 0x01 0x34 0x35 0x36
 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
 0x00 0x00 0x00 0x00 0x00 0x00 0x03 0x04 0x02 0x01 0x01 0x35 0x44 0x49
 0x53 0x50 0x4c 0x41 0x59 0x20 0x31 0x00 0x00 0x00 0x00 0x00 0x00 0x00
 0x44 0x49 0x53 0x50 0x4c 0x41 0x59 0x20 0x32 0x00 0x00 0x00 0x00 0x00
 0x00 0x00 0x03 0x01 0xb9 0xf6 0x00 0x58 0x02 0xb9 0xf6 0x00 0x58 0x03
 0xb9 0xf6 0x00 0x58 0xe8 0x18
 0xcf 0x7f 0xda

Server validates and returns OK Hexadecimal frame:

0x04 0x06 0xb9 0xf6 0x00 0x58 0x00 0x00 0x00

Event submission:

Server sends the sendEvent; Entry Date 1476458169

Exit Date 1476458170

Online/offline event 0

Reader ID 2

Identifier Type 1

Identifier value

'[34][35][36][00][00][00][00][00][00][00][00][00][00][00][00][00][00][00][00][00]

Card Level 3

Access credit range that was decremented: 4

Message quantities: 2

Access type or status event 1

Access direction 1

dFlow Identification ID 0

Hexadecimal frame:

0x03 0x06 0xba 0xf6 0x00 0x58 0x31 0x00 0xb9 0xf6 0x00 0x58 0xba 0xf6
0x00 0x58 0x00 0x02 0x01 0x34 0x35 0x36 0x00 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x03 0x04 0x02 0x01 0x01 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x000x00

Client sends OK

Hexadecimal frame:

0x04 0x06 0xba 0xf6 0x00 0x58 0x00 0x00 0x00

4.2.9. Tables

4.2.9.1. *Return Codes*

Table of values assigned to the Return Code field

Code	Value
0	Success
1	Failure
2	Busy
3	Not Implemented
4	Executing
5	Software Version Error
6	Invalid Reader ID
7	Partially Executed
8	No events in queue
9	No Communication

4.2.9.2. *Color Trigger*

The input and output are defined according to the ExecuteAccess command field.

The color codes are in ASCII.

Code	Color
0	Green
1	Yellow
2	Blue
3	Orange
4	Light blue
5	White
6	Purple
7	Pink

4.2.9.3. *Access and Status Types*

Code	Value
0x01	Access
0x0a	Access Withdrawal
0x0c	Access Granted under Duress
0x0e	Access allowed out of rest
0x0f	Access allowed through turnstile bypass
0x22	Access allowed with companion
0x26	Vehicle Access Allowed
0x2d	Access allowed to authorizer
0x3a	Access allowed to driver
0x67	dFlow controller status

4.2.9.4. *dFlow Status Codes*

Code	Value
01	Reader instantiated (active) with reading issues
02	Many connection attempts on the TCP/IP network
03	Possible IP duplicate on the network
04	CPU Usage > 85%
05	RAM Usage > 85%
06	Access is busy
07	User is already valid
08	Error creating access
09	New dFlow



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