TDE-lighttech
illuminating creativity

IZI-Access Manual

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illuminating creativity

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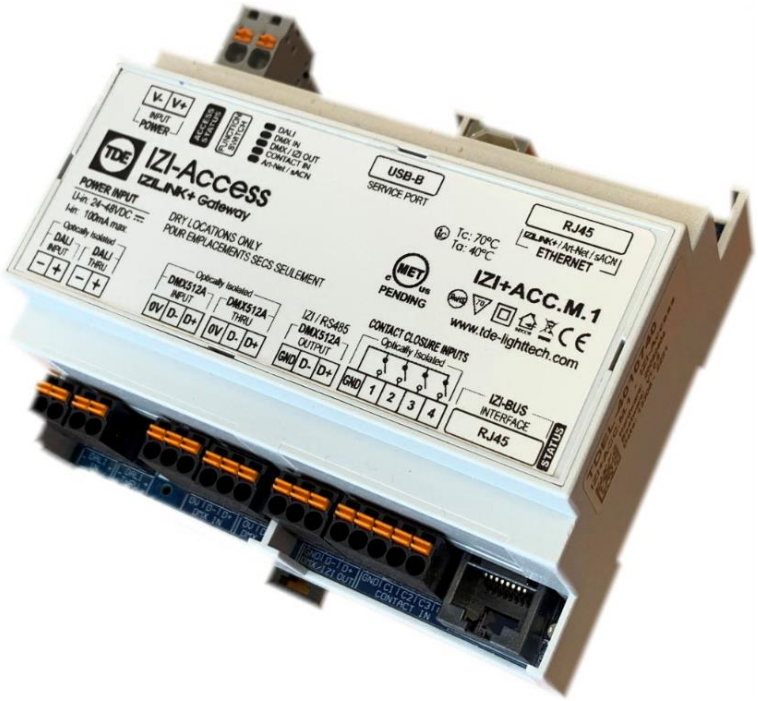
General

The IZI-Access is designed to create a gateway to the IZI-Link and IZI-Link+ system. Multiple interfaces will be offered to access/control/monitor/update the system via ethernet and usb.



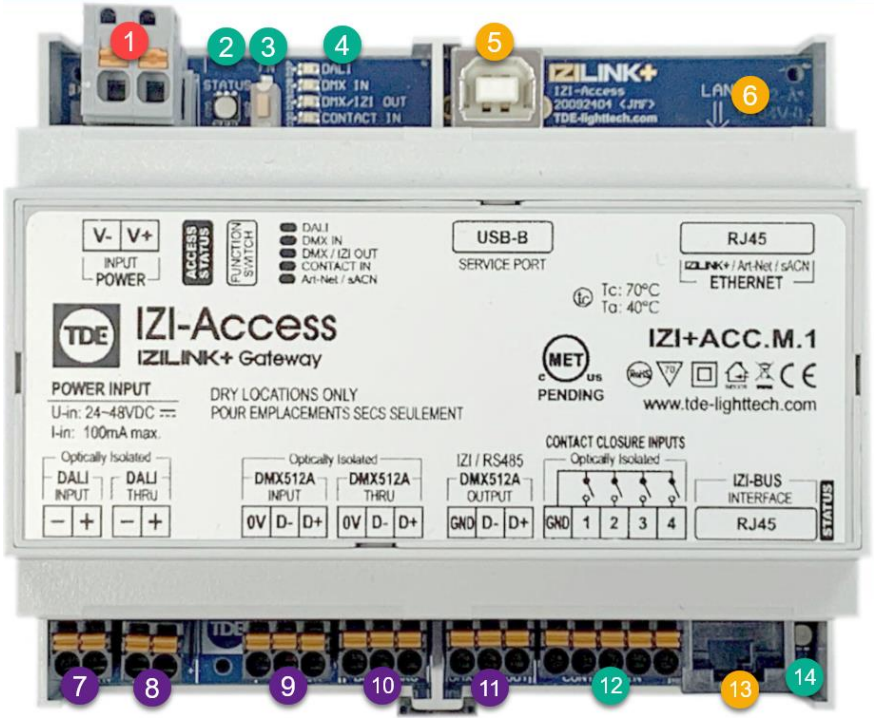
Version

Version	Author	Date	Firmware	Changes
0.1	MZ	8-6-2021		Initial document
0.2	MZ	17-6-2021		Added scene priorities and protocol fail actions
0.3	MZ	6-7-2021		Added photos, updated web page appendix
0.4	MZ	12-7-2021		Dali support added
0.5	MZ	5-10-2021	1.1.x	Added virtual contact inputs
0.6	MZ	9-11-2021	1.1.x	Added OSC and playbacks
1.1	MZ	22-11-2021	1.1.x	Removed Draft watermark
1.2	MZ	19-7-2022	1.1.x	Corrections
1.3	MZ	26-7-2023	1.2.x	OSC messages added Debounce adjusted IZI-bus LED functionality extended
1.4	MZ	11-9-2023	1.2.x	2nd universe added for Art-Net and sACN (1024 channels) 3rd patch universe available for Art-Net and sACN Dmx speed

Attention: tip of the day

If you power-up the IZI-Access for the first time, the default password is ‘p@$$word’. This password must be used in the IZI-Supervisor and the IZI-Manager.

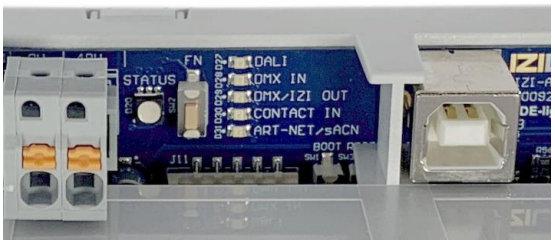
Overview



1. Power connector
2. Access Status LED
3. Function switch
4. IO LEDs
5. USB-B connector
6. RJ45 ethernet input
7. Dali input
8. Dali Thru
9. DMX in
10. DMX thru
11. DMX out
12. Contact inputs
13. IZI-BUS
14. IZI-BUS Status LED

LEDs

The IZI-Access has 2 status LEDs (RGB) and 5 single colour indicators.



Status LED

The status LED is a RGB LED which will reflect the state of the IZI-Access.

Color	Pattern	State	Description
Blue	Blink fast	Init	Initialising after start-up or reset
Blue	Heart beat	Idle	No active connections but still alive
Green + aqua	Heartbeat in aqua	Network connection	A remote application is connected to the device via local network (for configuration, monitoring, control)
Green + light blue	Heartbeat in blue	Cloud connection	A remote application is connected to the device via the cloud (for configuration, monitoring, control)
Green + pink	Heartbeat in pink	USB connection	A remote application is connected to the device via USB (for configuration, monitoring, control)
Orange	Blink pattern	Warning(s) pending	Can be shown during all states above, a blink pattern every 10 seconds. Count blinks for specific warning.
Red	Blink pattern	Error(s) pending	A continuous blink pattern with pause for error indication. Count blinks for specific error.

Errors

If an error is detected the LED will blink red only (no other colours). An error is a severe malfunction, meaning the IZI-Access cannot function normally. Errors will not be cancelled, only a reset can 'solve' the error.

A blink pattern will show the error with the highest priority (lowest number). A pause will be in between the blink pattern, count the blinks for the specific error.

Blink	Error	Description
1	Hardware error	Extern RAM not functioning OK
2	Hardware error 2	Extern flash not functioning OK
3	Supply voltage too high	The supply voltage is above 52V
4	Temperature too high	The temperature of the processor is above 85 degrees Celsius
5	Supply voltage too low	The supply voltage is under 18V
6	OS assert	Software error in OS (watchdog reset will follow)
7	System assert	Software error in network (watchdog reset will follow)
8	File system error	No file system or corrupt
9	Safe mode active	Problems occurred during boot, some features are not started until reset to be able to keep running without reset

Warnings

If a warning is detected the LED will blink orange only. The blue heartbeat or connection state will also be shown, the highest warning will be shown every 10 seconds. Warnings can be cancelled by software, if the warning has been solved.

A warning is an indication to the user not everything is operating as expected, but the operation can continue. A blink pattern will show the warning with the highest priority (lowest number). A pause will be in between the blink pattern, count the blinks for the specific warning.

Blink	Warning	Description
1	No DHCP	DHCP is enabled, but using fall back IP
2	Temperature high	The temperature of the processor is above 65 degrees Celsius
	Reserved	
4	OS warning	High stack usage
5	No NTP	No time received from internet or local network
6	Art-Net too many sources	Receiving data from more than 2 sources
7	Too many failed logins	Too many incorrect logins on one or multiple interfaces (kept per interface like cloud/ethermet/usb)
8	OSC parse err	Too many OSC parse errors (possibly other protocol uses same port)
9	Web page corrupt	Web page content not valid (or erased)
10	Device type corrupt	Device type files not valid or incomplete
11	Too much modules	Too much modules connected (IZILink+)

IZI Bus LED

The IZI Bus is part of the IZI-Link+. It will blink blue every 10 sec when nothing is connected.

Color	Pattern	State	Description
Blue	Blink slow	Idle	No modules connected on IZI-Bus
Green + aqua	Fading	Connected	Connected OK to one or more modules on the IZI-bus
Yellow	On	Discover	Discovering CAN modules
Orange	On	Storage	Shortly when storing new system config. If it stays on woo many modules in system

The LED will be used for attention signals, blinking inversed with the status LED.

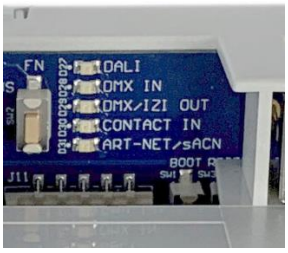
IO LEDs

The IZI-Access has 5 single colour blue indicators for all its interfaces (except USB and Ethernet, Ethernet LEDs are in the connector).

- Dali com indicator — Blinking when Dali data is send or received
- DMX in — Blinking when data is received (toggle on new valid frame)
- DMX/IZI out — Blinking when izi or dmx data is send or received (izi)
- Contact in — Blink pattern, indicating which contact input is active (can be multiple)
- ART-Net/sACN — Blink when Art-Net or sACN data is received

Switches

The IZI-Access has 3 switches on the PCB.



Function switch

The function switch is the only switch that can be reached without opening the housing. The function switch depends on the length and number of presses.

When performing a long press multiple LED blink sequences appear to indicate what action will be executed when the switch is released.

Press	Function	Description	LED Pattern
Release between: 0.1s - 1s	Temp cloud enable		Blink: Light blue/Blue
Release between: 2s - 4s	All off	Manual/Park released Scenes off Hold of Art-Net/Dmx off	Blink: Magenta/Blue
Release between: 10s - 12s	Password default	Password is reset to 'p@$$word', the http password is also reset to 'p@$$word'	Blink: White/Blue
Release between: 20s - 22s	Factory default	Settings are set to default Log is cleared Scenes are cleared	Blink: White/Red
Single click (short press on/off 0.1s – 0.5s)	Start Mqtt	If the option of temporary cloud enable is configured. A single short press will activate the temporary connection.	Blink: Light blue/Blue (after clicks)
Double click (short press on/off 0.1s – 0.5s)	Clear login attempt	If interfaces are blocked because of too many failed logins. It can be cleared by clicking 2 times.	Blink: Green/Blue (after clicks)
Triple click (short press on/off 0.1s – 0.5s)	Grant access with manufacturer password for 1 hour	Possibility to grant access for TDE without knowing the password of the customer.	Blink: Aqua/Yellow (after clicks)

Reset

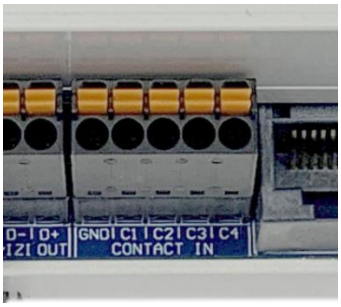
The reset button is positioned in the housing and can be used to reset the IZI-Access.

Boot button

The boot button is positioned in the housing and is used to force an update possibility of the controller on the IZI-Access. The switch should not be used by customers.

Contact inputs

The IZI-Access contains 4 contact inputs. The inputs have to be pulled low for at least 12ms (at least 100ms for versions 1.1.x and lower) to be activated.



With an input multiple actions can be performed:

- Activate scenes (1 to 32)
- Activate sequences (1 to 12)
- Activate patches (1 to 4)
- Release actions

Contact inputs can be configured as 6 types of inputs:

- Toggle NO
  Normally open toggle switch. Contact transition from `Open` *to* `Closed` *(to GND) is active,* `Open` *to* `Closed` *is inactive (toggle switch or PIR)*
- Toggle NC
  Normally closed toggle switch. Contact transition from `Closed` *to* `Open` *is active,* `Closed` *to* `Open` *is inactive (toggle switch or PIR)*
- Pulse NO
  Normally open pulse switch. Contact transition from `Open` *to* `Closed` *(to GND) is active/inactive alternately (pulse switch).*
- Pulse NC
  Normally closed pulse switch. Contact transition from `Closed` *to* `Open` *is active/inactive alternately (pulse switch)..*
- Trigger NO
  Normally open pulse switch. Contact transition from `Open` *to* `Closed` *is always activate (never inactivate action)*
- Trigger NC
  Normally closed pulse switch. Contact transition from `Closed` *to* `Open` *is always activate (never inactivate action)*

The mode of a contact input can be set (in case of scenes and sequences) how to be handled when an input source (sACN/Art-Net/Dmx) is present.

- Merge Merge with input sources (default)
- Source Contact inputs overrule input sources
- Contact Contact inputs are overruled by any input source

Please be careful to mix all types on the same contact inputs, this can lead to unexpected behaviour when multiple inputs are activated at the same time with different modes.

When 'Source' mode is used, the active scene or sequence will fade out in 2 seconds when an input source gets active, if the input sources are all disconnected, the fade in of possible active scenes will be in 4 seconds (both fixed).

For every contact input a priority can be set:

- Lowest
- Low
- Medium (default)
- High
- Highest

Priorities will be used for the activation of scenes, sequences and patches. If multiple inputs are activated to highest priority will 'win', meaning levels of a scene or sequence will override scenes and sequences started with a lower priority, and patches activated with a higher priority will 'win' from patches activated with a lower frequency. If the priority is the same the levels will be merged, and for patches the last activated will 'win'.

A long press action is available when the input type is set to pulse or trigger. The long action will be executed when a input is active for more than second. When a long press action is configured the normal active action will be triggered when the input is released again.

After a reset (software update or extern reset) the state of the inputs will be remembered and should work directly as before the reset.

Contact inputs	
Activation	*Input contacts*
Configuration	*IZI-Supervisor*
Current State	*IZI-Supervisor* *Web page*

Virtual Contact inputs

32 virtual contact inputs are available. The virtual inputs are not directly coupled to hardware like the 'Contact inputs' of the IZI-Access itself. The virtual inputs can be triggered by multiple sources:

- Dmx
- Art-Net
- sACN
- OSC
- IZILink+ modules (future)

A virtual contact input will merge multiple states set by the sources mentioned above. The sources will 'simulate' a level for the input. A maximum of 8 sources can be merged per virtual contact input, if only one of the 8 (possible) sources is triggering the active state, it virtual contact will be set to active.
The handling of the level transitions is the same as the 'Contact inputs' described in the previous chapter. All functionality is the same (type, mode, priorities).

If a virtual contact is triggered by DMX/Art-Net/sACN the channel used for the trigger will be set to 0 on the output, so the trigger channel level can not be seen. If the trigger channel is used in a scene that is activated via a contact input, this will be set to the output.

Contact inputs	
Activation	*Input contacts*
Configuration	*IZI-Supervisor*
Current State	*IZI-Supervisor* *Web page*

Input to output mapping

It is possible to configure an output mapping on the activation of a contact input or virtual contact input. This will mean if an input gets active, the a channel on a selectable output source will be set to 255 (100%). If it gets inactive it will be set to 0%. The original value on the output source will be ignored.

The mapping can be output on 3 output sources or a combination of these outputs:

- Dmx
- Art-Net
- sACN

If mapped to sACN or Art-Net, do not forget to enable the sACN/Art-Net output in the settings.

Interfaces

Ethernet

The IZI-Access has one ethernet RJ-45 connector with two activity LEDs. The ethernet connection supports DHCP or static IP. Also a combination is possible, when no DHCP is found a fallback is done on the static IP after a configurable amount of seconds.

The default settings are:

DHCP: enabled
IP address: 192.168.2.102
Subnet: 255.255.255.0
Gateway: 192.168.2.254
DNS primary: 192.168.2.254
DNS secondary: 0.0.0.0
Fallback time: 15 sec

USB

The IZI-Access has a USB-B connector for USB support. When connected to a PC it will be reported as a COM port (if the driver is installed). It can only be used in combination with the IZI-Supervisor and IZI-Manager.

IZI-Bus

The IZI-Bus is also a RJ45 connector on the IZI-Access and will be used for future expansion for communication with other IZI-Link+ modules.

Scenes

The IZI-Access can store 64 scenes containing level information for 512 channels. Timing of fade in/out is not stored in the scene. A tiny effect engine is stored in the scene, which will make it possible to add delay patterns within the scene (which is stored in the scene).

It is also possible to store scenes as 'partial scenes', meaning there is only data in the scene for specific fixtures. Channels that are not part of the scene will never be affected when activating the scene.

Scenes	
Activation	*IZI-Supervisor* *Web page* *Input contacts*
Store/Create	*IZI-Supervisor*

Sequences

The IZI-Access can store 12 sequences. A sequence is list of max 128 scenes that can be executed with settable fade and delay times. A sequence can also contain loops to repeat certain scenes. The trigger to go to a next can be automatic or triggered by an extern source.

A sequence must be 'played' on an executor, 4 executors are available.

Sequences	
Activation	*IZI-Supervisor* *Input contacts*
Store/Create	*IZI-Supervisor*

Patches

The IZI-Access can store 4 soft patches (in addition to the default one on one patch). A soft patch will be applied to all input protocols such as Dmx, sACN and Art-Net. A patch can be extremely useful to bundle channels in some situations. For example, sometimes you want to control all your fixtures separately but mostly it will be needed that the fixtures are controlled as one. To save the channel amount over a universe, a patch can be very helpful.

A patch also gives the possibility to set a maximum output per channel or set it to a fixed value.

Patches	
Activation	*IZI-Supervisor* *Web page* *Input contacts*
Store/Create	*IZI-Supervisor*

Data buffers

The have a better understanding how the IZI-Access works an processes it signals to a output protocol, a short attempt is done to explain how it works internally.

The IZI-Access has 5 main data buffers:

1. DMX
2. Art-Net
3. sACN
4. Scene
5. Manual/Park

The basic theory is that all the buffers will be merged HTP and that result will be used for the output of DMX/Art-Net/sACN. Exceptions can be made with the contact inputs when the input sources are overruled by a scene or vice versa, and the Manual/Park buffer has an override option.

DMX/Art-Net/sACN

The input protocol buffers are normal buffers with one universe. Sending input with all 3 protocols at the same time, will always be merged HTP. How multiple protocol inputs of the same type are handled, refer to the specific chapter of that protocol.

Scene

The scene buffer is more complex. The scene buffer consists of 8 playback buffers, which are merged according to the priority that they were executed with. A scene can be executed with 5 priorities:

- Lowest
- Low
- Medium (default)
- High
- Highest

At the time of writing these are the sources that can execute a scene:

- Contact input 1 .. 4
- Virtual contact inputs 1 .. 32
- Dali mapped scenes/sequences
- Timeout scenes of DMX/Art-Net/sACN
- Web/IZI-Supervisor activation

Every playback has its own buffer with corresponding priority. On every change a new result will be calculated taking all priorities into account. The calculation is done per channel, because a scene does not have to contain information for all channels. Sources with the same priority will be merged HTP.

The playbacks 7 and 8 are not available for users, and are used for fixed functionality. Playback 7 is used for Dali mapping, playback 8 is used for testing with Web/IZI-Supervisor and for protocol timeouts.

Playback masters

Every playback has its own master (from 0%-100%/ 0 – 255). The playback master is 100% after power-up. The master level can be changed via (virtual) contacts (choosing Dim up/down),via OSC or Dmx/Art-Net/sACN mapping.

No real crossfades are possible in the IZI-Access, only fading to a scene via the playback master.

If IZI-Link modules with a master channel are known in the IZI-Access, the level set by the playback master will only apply to the master channel (and channels not assigned to any fixture or fixtures with no master channel). So when fading a master from 0 to value 1 (and higher) of a scene with a fixture with RGBW and a master, will

directly set the color channels to the scene value, while the master channel will follow the playback master. If an IZI-Link module does not have a master, all channels will fade according to the level of the playback master.

Manual/Park

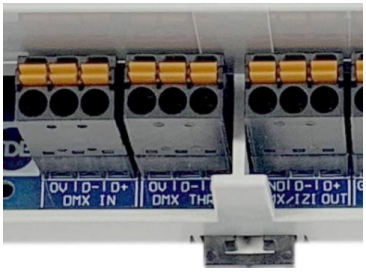
The manual/park buffer will be used for temporary test actions. If channels are set via the web server or IZI-Supervisor, this will be done in the Manual/Park buffer. The buffer will stay valid after a reset (or software update), but not after power-down.

The Manual/Park buffer also has the possibility to override all other buffers. This way it is possible to set a channel or channels of a fixture to a fixed value. Please keep in mind the overridden values won't be there any more after power-down.

Protocols

Dmx

The IZI-Access has 3 Dmx connectors: in, out, thru. At the moment of writing the direction of the Dmx in and out are fixed and not configurable.



DMX in

The standard DMX protocol is supported, RDM messages will be ignored. The DMX signal is considered valid when two frames of the same length are successfully received (of course separated by a break). If the signal is valid, the content will be used when the complete frame is in. This will mean that the Dmx out is always one frame behind.

An action can be configured in the application settings what should happen when the DMX signals drops (to zero, to full, hold, to scene x). The scenes will be activated in 4 seconds and will have priority Low (same for to full). The timeout action will only be executed when Art-Net and sACN have no valid input at that time. Scenes activated by a timeout will be fade out in 2 seconds, when any protocol input (Dmx/Art-Net/sACN) receives a valid input.

DMX out

The DMX out is also standard DMX protocol (always 512 channels), no RDM support. The default output rate is 33.3Hz fixed (was 40Hz in 1.1.x and below). The speed is configurable in 4 speeds:

- 25Hz
- 30.3Hz
- 33.3Hz
- 40Hz

The DMX will be activated with a short delay after power-up or reset (max 10 seconds). The delay is used to make sure no initial 0-s are send when there is already an input sending data to our device. So the dmx in or Art-Net input has max 10 seconds to get stable or connected, before the initial 0-s are send. If the DMX in is stable or the Art-Net/sACN in is connected before the 10 seconds is shortened and the output will get active immediately.

The DMX out will also be used for 'IZI-Link' communication, which can only be used via the IZI-Manager.

Art-Net

Art-Net in

The IZI-Access (v1.2.x and higher) supports two universes as an input, meaning 1024 channels can be used. For now the 2nd universe is only enabled when IZI-Link+ products are used. Also there is a 3rd universe available for a direct patch (see next paragraph).

The Art-Net is received on a fixed port 6454. For now these commands are supported:

- ARTNET_OP_POLL
- ARTNET_OP_DMX
- ~~ARTNET_OP_SYNC~~
- ARTNET_OP_ADDRESS

The name reported is the name of the application configuration. The name can not be changed by the ARTNET_OP_ADDRESS command.

The IZI-Access has only one IP address, meaning the static IP or the IP assigned by a DHCP will be used for the Art-Net communication. The default for Art-Net is the 2.x.x.x range, if this must be supported the complete device will use this IP address.

The IZI-Access will accept 2 sources for the ARTNET_OP_DMX command. The signals will be HTP merged, a third input via Art-Net will be ignored. If one of the signals will drop, the signal content will be freed (to zero) after 6 seconds. This applies to all input universes (including the patch universe).
If the last Art-Net input signal drops, an action is configurable in the application config (to zero, to full, hold, to scene x). The scenes will be activated in 4 seconds and will have priority Low (same for to full). The timeout action will only be executed when Dmx and sACN have no valid input at that time.
Scenes activated by a timeout will be fade out in 2 seconds, when any protocol input (Dmx/Art-Net/sACN) receives a valid input.

Art-Net Patch

A 3rd (or 2nd when no IZI-Link+ is used) universe is available (v1.2.x and higher). For this universe a patch can be selected which is always applied to the input send to the Art-Net patch universe. This will make it possible to make a patch selection via a universe selection.

The patch is applied before the general patch that can be applied to all input sources (Dmx/Art-Net/sACN). If a general patch is active and the patch universe is used, the input source is patched twice, which can result in unwanted output.

Art-Net out

Art-Net output can be enabled for a 2 universes (2nd universe from v1.2.x). The 2nd universe can only be used when IZI-Link+ products are present. The IZI-Access can be used as a DMX to Art-Net converter. But also manual input or scenes can be output via Art-Net or a combination.

The refresh rate of the Art-Net out is 40 packets/sec. This rate is only send when data (to be output) really changes. If no output changes, the rate will drop to 1 packet/s.

The Art-Net out will be activated with a short delay after power-up or reset (max 10 seconds). The delay is used to make sure no initial 0-s are send when there is already an input sending data to our device. So the dmx in or Art-Net input has max 10 seconds to get stable or connected, before the initial 0-s are send. If the DMX in is stable or the Art-Net or sACN in is connected before the 10 seconds is shortened and the output will get active immediately.

sACN

sACN in

The IZI-Access (v1.2.x and higher) supports two universes as an input, meaning 1024 channels can be used. For now the 2nd universe is only enabled when IZI-Link+ products are used. Also there is a 3rd universe available for a direct patch (see next paragraph).

The sACN is received on a fixed port 5568. Packets will be accepted on the corresponding Muliticast address (for the chosen universe) or the unicast address, the IP address of the IZI-Access itself. This is an advantage to the Art-Net implementation that the also the 192.168.x.x can still be used.

For now only the ‘Data Packet’ is supported, the ‘Synchronization Packet’ is not supported yet.

The IZI-Access will accept 2 sources for sACN and merge them HTP. If a third source will come along with a higher priority than one of the already incoming sources, the new higher prio source will take the place of the lower prio source. If 3 sources all have the same priority one of them will be ignored. This applies to all input universes (including the patch universe).

Priority per channel is not supported. The source name in the packets is filled by the name of the IZI-Access (configured with the IZI-Supervisor). The CID is a fixed number, ending with the MAC address of the IZI-Access, which should make it unique.

If the last sACN input signal drops, an action is configurable in the application config (to zero, to full, hold, to scene x). The scenes will be activated in 4 seconds and will have priority Low (same for to full). The timeout action will only be executed when Dmx and Art-Net have no valid input at that time.
Scenes activated by a timeout will be fade out in 2 seconds, when any protocol input (Dmx/Art-Net/sACN) receives a valid input.

sACN Patch

A 3rd (or 2nd when no IZI-Link+ is used) universe is available (v1.2.x and higher). For this universe a patch can be selected which is always applied to the input send to the sACN patch universe. This will make it possible to make a patch selection via a universe selection.

The patch is applied before the general patch that can be applied to all input sources (Dmx/Art-Net/sACN). If a general patch is active and the patch universe is used, the input source is patched twice, which can result in unwanted output.

sACN out

sACN output can be enabled for 2 universes. The IZI-Access can be used as a DMX to sACN converter. But also manual input or scenes can be output via Art-Net or a combination.

For now the sACN output will only support Multicasts to 239.255.x.x (depending on the chosen universe, starting from 1 unlike Art-Net). The priority only can be set for the complete frame at once, not per channel. The default priority is 100.

The refresh rate of the sACN out is 40 packets/sec. This rate is only send when data (to be output) really changes. If no output changes, the rate will drop to 1 packet/s.

The sACN out will be activated with a short delay after power-up or reset (max 6 seconds). The delay is used to make sure no initial 0-s are send when there is already an input sending data to our device. So the dmx in, sACN or Art-Net input has max 10 seconds to get stable or connected, before the initial 0-s are send. If the DMX in is stable or the Art-Net in or sACN in is connected before the 10 seconds is shortened and the output will get active immediately.

The ‘Universe Discovery Packet’ is supported and will be send on ‘universe 64214’, reporting the universe it is transmitting on. It wil not be send if the output is disabled.

IziTopic

The IziTopic protocol is used as communication protocol for the IZI-Supervisor. The protocol is not an open protocol.

The protocol is a readable TCP protocol using port 4445. Although it is readable, security is added, so messages cannot be copied.

The protocol is used over USB, Ethernet and for cloud communication. For cloud communication extra TLS encryption is added.

Login

To login to the IZI-Access a password is needed. After 4 failed attempts the access will be blocked on that interface for 1 minute. If the user tries again after 1 minute and fails again 4 times within 2 minutes, the IZI-Access is blocked for 2 minutes. If the user tries again after 2 minute and fails again 4 times within 4 minutes, the IZI-Access is blocked for 4 minutes. And so on, to a max of 16 minutes.

By double clicking the switch, the attempts can be cleared.

Special care should be taken if security is very important. The web server is http and is protected with a username and password, but no max attempts are kept, and all other security used by the IZI-Supervisor and IZI-Manager is not present. Disable the web server if security is important.

Connections

Multiple connections can be made at the same time to the IZI-Access. A connection with USB, ethernet and cloud is possible at the same time. Every connection results in a session after entering the correct password. A maximum of 4 sessions at the same time is supported (a session can be started with any protocol or interface).

Interface	Max session per interface	Remark
USB	1	
Ethernet	3	Max 3 sockets at a time
Cloud	4	

Dali

The Dali port can be used to connect 3rd party Dali devices like displays, switches and PIRs. If a commissioning session is started (on a extern device) on the Dali bus and IZI-link fixtures are successfully configured, the IZI-Access will simulate the presence of the modules. This is only possible in small systems, because Dali only supports 64 devices per bus. Also if a CC2 or CC4 is used, this will result in the simulation of 2 and 4 Dali fixtures respectively.

Only Dali v1 is supported for now. Most basic commands are supported, only the scene store commands are not handled for now. Scenes have to be created with the IZI-Supervisor. Scenes can be recalled by Dali, which will only work for known fixtures. If scenes are created with channels which are not channels of a known fixtures, these channels will not be activated.

A mapping can be done on the Dali scene activation (broadcast only) via the IZI-Supervisor. Actions like patches, scenes and sequences can be started via a Dali ‘Go to scene’ command, so 16 mappings can be made.

Scenes and sequences activated via mapping, all will execute on the same playback (playback 7).

OSC

The OSC protocol (Open Sound Control) has been implemented to control the IZI-Access (UDP only). Almost the complete implementation is available, including wildcards and bundled messages. The only type that is not supported for now is 'Float'.

OSC in

The input for OSC can be enabled and disabled and it can be assigned to a specific network port. Three action types are supported via OSC:

- Activate/De-activate Virtual Contact1 – 32
- Fade Virtual Contact1-32
- Playback Master1-8

Activate Virtual Contact

By means of OSC commands the state of the VContact can be set, so it is a simulation. The VContact itself will contain the real action executed (like set patch or goto scene).

Command: '/buttonx' (x=1 to 32) Value: Integer (0 or 1), or Boolean (True/False)

Note: The way the command is handled also depend on the input type. If the input type of vcontact 1 is 'Toggle NO' for example, sending state True (or not 0) will result in the Active action, and False (or 0) will result in the inactive action. Input type 'Pulse' or 'Trigger' is also possible, meaning the state should change twice (True and False) for a complete pulse. With Pulse or trigger it is also possible to trigger the 'Long press' action.

Fade Virtual Contact

By means of OSC commands it is possible to activate and fade Scenes or sequences that are set as active action in a VContact. What actually happens, is that if faded from 0 to 1 or higher, the corresponding Vcontact is activated and the playback master (of the corresponding VContact) is set to the value received. This way it is possible to fade a scene from 0 to 100% (0 .. 255).

Command: '/faderx' (x=1 to 8) Value: Integer (0 to 255)

Note: The implementation will only work if the input type of the Vcontact is set to 'Toggle NO', also the inactive action should be set to 'Counter action'. Also fading on actions like 'Patch' or 'Release' is possible but makes no sense.

Note2: Fading the scene or sequence will use the master of the playback configured on the corresponding VContact. This means that other actions that are active and which use the same playback, will also fade (only possible with partial scenes).

Playback master

By means of OSC commands it is possible to set the playback masters.

Command: '/masterx' (x=1 to 32) Value: Integer (0 to 255)

OSC out

The Osc out can be enabled and disabled. When enabled the IZI-Access will report feedback when some parameters are changed by another source than OSC (via local inputs or other devices).

If the OSC out is enabled the following commands will be send to report updates:

- Status containing the current system state (reported every minute, and when changed)
  - Command: '/status' Value: String ('OK' or pending errors/warnings)
- Transitions of a VContact state (triggered by another source like Art-Net or extern modules)
  - Command: '/buttonx' (x=1 to 32) Value: Integer (0, 1)
- Update of a VContact state (triggered by another source like Art-Net or extern modules)
  - Command: '/buttonall' Value: Integer (bitmap of vinputs)
- Transitions of a local Contact state (triggered by 4 local contacts)
  - Command: '/lbuttonx' (x=1 to 32) Value: Integer (0, 1)
- Update of a Contact state (triggered by another source like Art-Net or extern modules)
  - Command: '/lbuttonall' Value: Integer (bitmap of local contacts)
- Updates of a Playback masters (triggered by another source like fade via local inputs)
  - Command: '/masterx' (x=1 to 8) Value: Integer (0 - 255)
- Updates of current Patch
  - Command: '/patch' (x=1 to 8) Value: String ('No patch', 'Name of patch x')

Prefix

It is possible to add a prefix to the commands parsed and send by the IZI-Access. For instance the prefix can be set to 'IZI-Access1.1/' meaning the command for setting playback master 2 will be: 'IZI-Access1.1/master1'. This way it is possible to make some tree structures when multiple IZI-Access modules are active. Let's say the first number in the example is the floor in a building, a wildcard can be used to address all IZI-Access modules on the same floor: 'IZI-Access1.?/master1'.

Feedback

A setting is available to enable feedback to commands of extern sources. By default this feature is off, meaning if an external source sends a command no response will be returned. If feedback is enabled (and OSC out) the commands buttonx/faderx/masterx will be acknowledged by an écho' of the message on the OSC out port.

Unknown traffic

Since the port of the OSC in is free configurable a check is done if no other UDP messages are received, not meant for the IZI-Access. If more than 10 messages per second are not parsed as a correct OSC command, a warning will be logged and shown, to indicate it is probably better to use another port.

Tools

IZI-Supervisor

A new tool has been developed, the IZI-Supervisor. The purpose of the IZI-Supervisor is to:

- Configure/Update/Monitor the IZI-Access
- To be the IZI-Manager replacement for IZI-Link+ products

This means the IZI-Manager is still needed for IZI-Link projects.

A password is needed to get access from the IZI-Supervisor, default this is ‘p@$$word’.

Web server

The IZI-Access also has a web server available. The web server contains a subset of configuration and monitoring possibilities. See Appendix A for more detailed description.

IZI-Manager

The IZI-Manager version 1.8.x.x and higher supports the IZI-Access. In the list of comports the IZI-Access com ports (USB) should appear, but it is also possible to connect via ethernet (when enabled by the user in the menu).

A password is needed to get access from the IZI-Manager, default this is ‘p@$$word’. This is the same password that is used for the IZI-Supervisor. When a new configuration is written by the IZI-Manager, the connected IZI fixtures will be downloaded in the IZI-Access.

Logging

The IZI-Access can log events to search for errors or other events that have happened in the past. The level of logging can be configured.

- Critical errors only — Only critical errors
- Errors only — Only critical and non-critical errors will be logged
- Errors and warnings — All errors and warnings will be logged
- Info (default) — All errors, warnings and general info about actions and events will be logged
- Trace — All will be logged, including debug info to search for specific situations or crashes

In theory any log level should not change the behaviour of the IZI-Access, although trace level does force to write more to memory.

Time

If there is a connection to the ethernet, a NTP server will be used to set the time every log occurred. If not, no worries, to offset to the time of reading will be used to calculate the time it occurred. This solution will only work if the device has not been without power too long.

Events

More than 150 types of log events are available right now. Not all types will be described in this manual. But some examples will be given what to expect. Some are a bit complex to describe, but they can help to solve or recreate the situation the event occurred in.

Critical errors

- Supply voltage too high
- Processor temperature too high (> 85 degrees)
- OS (operating system, no linux) crashed
- Network stack crash

Errors

- Corrupt memory
- File system corrupt
- Supply voltage too low
- Too many incorrect logins

Warnings

- Module was reset (cause of reset is described, power-down, reset …)
- Too many Art-Net sources
- Too many logins at the same time (IZI-Supervisor, IZI-Manager)
- Incorrect login
- Factory default occurred
- Processor temperature high (> 65 degrees)
- No DHCP server, fallback on static IP

Info

- Application settings changed (with sector of change)
- Update of firmware (with (new) version
- Update of device types or web pages
- Art-Net input source start and stop
- sACN input start and stop
- DMX in start and stop
- Patch activation
- Patch storage/update

- Scene activation
- Scene storage/update
- Sequence activation
- Sequence storage/delete
- Network (ethernet) OK with IP address
- Web page requests
- IZI-Link usage (IZI-Manager)
- Contact input activated/deactivated
- Cloud access enable (remote service)
- Local switch activated
- NTP time syncs
- Processor temperature OK (logged every 12 hours or 5 degrees difference)
- Supply voltage OK (voltage logged every 12 hours)

Debug/Trace

- Art-Net input higher than 0% (with average over how many channels, only when stable for 1 minute)
- Art-Net input 0% over all channels (stable for 1 minute)
- sACN input higher than 0% (with average over how many channels, only when stable for 1 minute)
- sACN input 0% over all channels (stable for 1 minute)
- Dmx in input higher than 0% (with average over how many channels, only when stable for 1 minute)
- Dmx in input 0% over all channels (stable for 1 minute)
- Connections via USB/ethernet (low-level)
- Stack reports of OS

Logging	
Read	*IZI-Supervisor*
Set (level)	*IZI-Supervisor*

Appendix A

Webserver

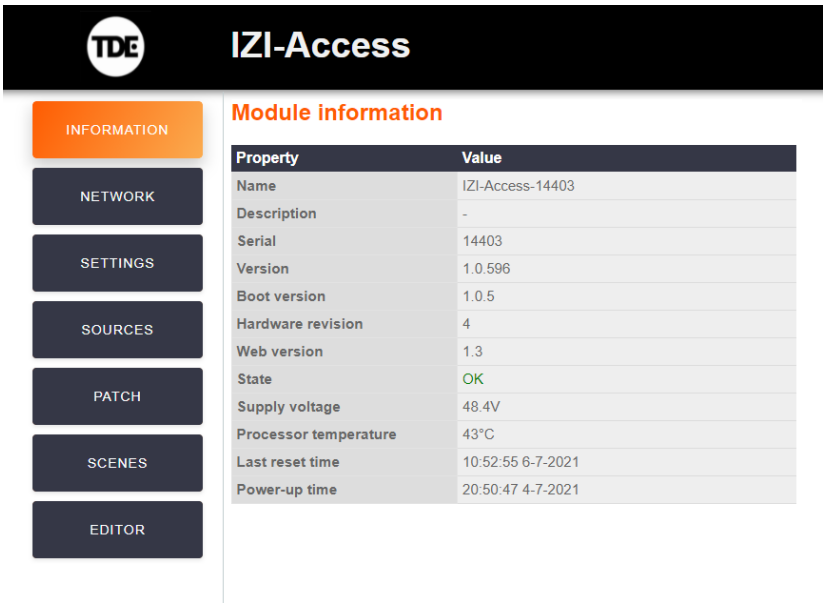
The web server is http (not https), and is only meant for internal use, so on the intranet and not the internet. Authentication is added to access any part of the pages. The user and password can be set as a setting.

The web server can also be disabled via the settings, by default it is enabled and the username and password is: ‘admin’, ‘p@$$word’.

mDNS

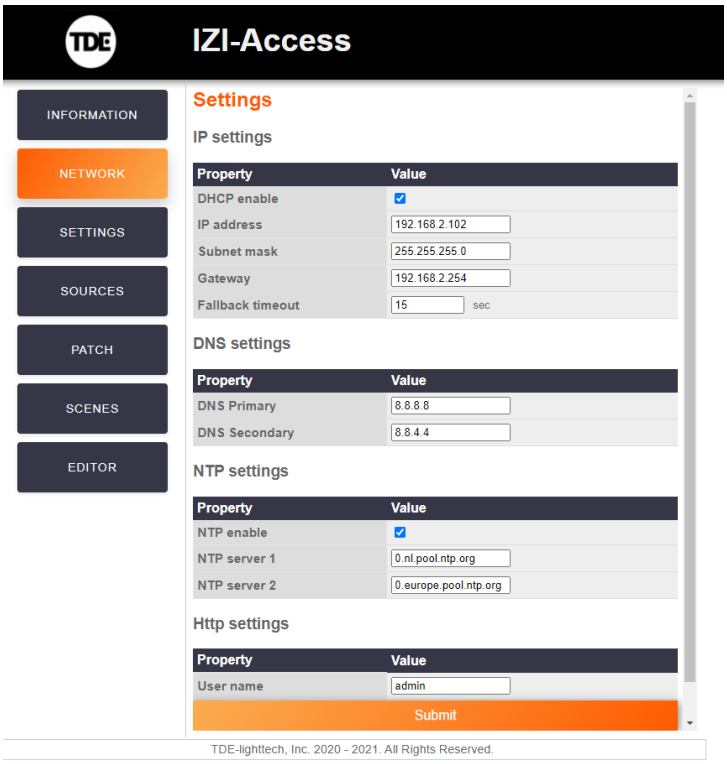
The IZI-Access supports mDNS. With mDNS it is possible to open the web page of an IZI-Access without knowing its IP address. What you do have to know is its name, the name can be set with the IZI-Supervisor. If you know the name, fe ‘IZI-Access-Manual’, you can type:
http:// IZI-Access-Manual.local in your browser.

Information



The information page data about the current state of the IZI-Access.

Network



In the network page the network settings can be altered.

DHCP

When DHCP is enabled the IZI-Access will search for an DHCP server after reset or power-up. If the DHCP server is not found it will 'fallback' into its static configured address, the time to wait for the DHCP server can be configured with the 'Fallback timeout'. If the DHCP server gets online again, it will use the DHCP server and drop its static IP.

Static IP

If the DHCP server is not enabled or the server is not online, the static IP address will be used after reset of power-up.

DNS

A primary and secondary DNS server can be set. The IZI-Access uses DNS servers for resolving names for NTP and cloud communication. A primary and secondary server can be set, which are only used when DHCP is disabled of the DHCP server cannot be found. If the DHCP server assigns a DNS address this will overrule the settings here.

NTP

The NTP server is used for getting the current time. At the moment of writing the time if only used for logging and showing the 'Power-up time' and 'Last reset time'.

Two servers can be set to retrieve the time, the fallback on the second will happen automatically.

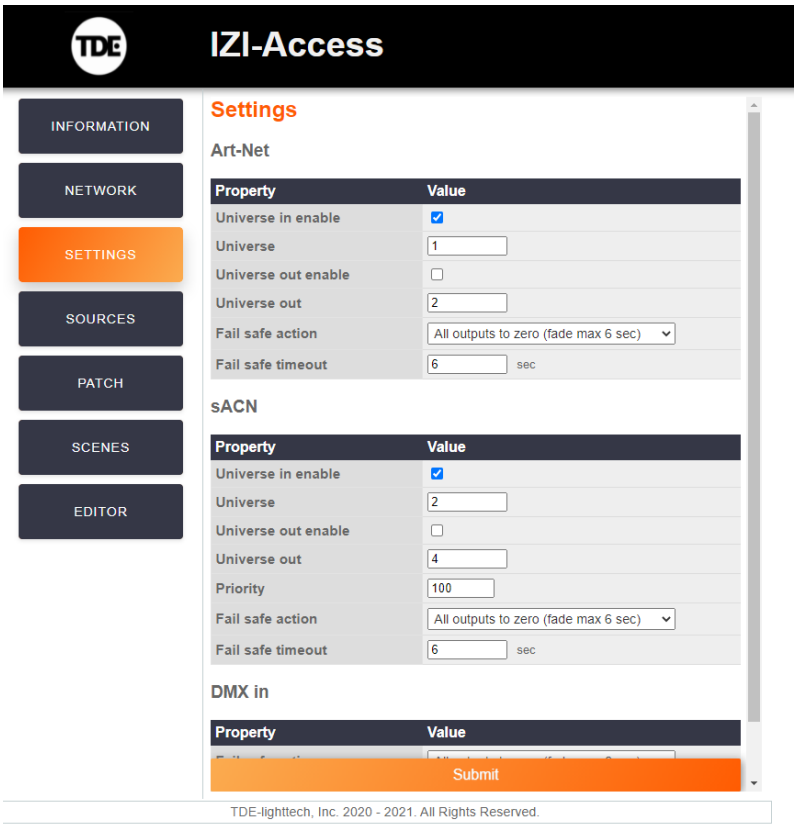
HTTP settings

The username and password for accessing the web page can be set. This is not the same password as the IZI-Supervisor and IZI-Manager uses.

Apply

All settings will only get active after Apply is pressed. If a reset is needed for the settings to active, a pop-up will appear that the 'IZI-Access' has to be reset manually. This is done on purpose, since the protection is not very high on the web page access, resetting the device remotely is protected in a higher level.

Settings



The settings will contain protocol settings for Art-Net, Dmx and sACN.

Art-Net

Art-Net in and Art-Net out can both be enabled and disabled separately. Both have their own universe which may not be the same for both in and out.

The action what should happen when the Art-Net signal drops can be set with a specific timeout, which is default (and minimal) the protocol timeout.

sACN

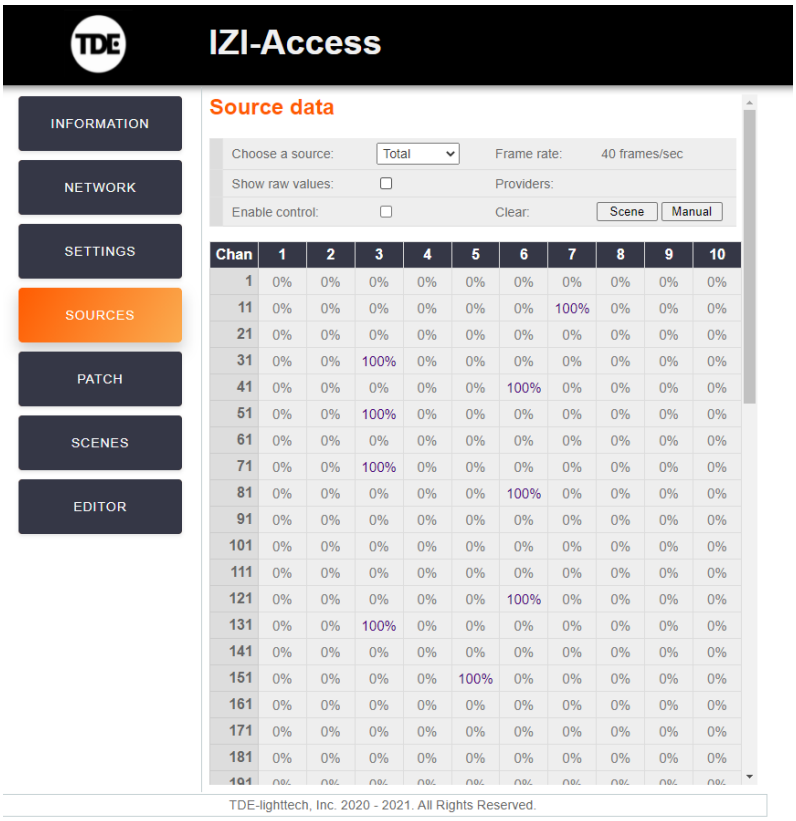
sACN in and sACN out can both be enabled and disabled separately. Both have their own universe which may not be the same for both in and out.

The action what should happen when the sACN signal drops can be set with a specific timeout, which is default (and minimal) the protocol timeout.

Dmx

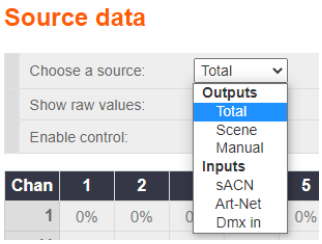
The only setting for DMX is what should happen when the Dmx signal drops, their can be set with a specific timeout, which is default (and minimal) the protocol timeout.

Sources



The name sources, refers to input and output sources like Art-Net and Dmx. In the view the inputs and outputs of the single universe of the IZI-Access can be visualised.

By default the total is shown (meaning all sources mixed). It is possible to select a single source, to view only the data of that particular source.



Enable control

A minimal option to activate channels is implemented. To enable this, the 'enable control' checkbox has to be set. When this is done, if a single channel is clicked (the value with percentage), the channel will toggle from 0% to 100% and vice versa.

It is also possible to click a complete row, and toggle the percentage of 16 channels at once.

The mode will only work when 'Total' or 'Manual' is selected as source.

Show raw values

When 'Show raw values' is checked, the values will be shown as decimals (0 to 255), nort checked, the percentage will be shown.

Frame rate

The frame rate is most interesting when selecting individual sources. Selecting Dmx in, the frame rate of the incoming DMX signal will be shown. Selecting Art-Net it will show the incoming Art-Net packet rate.

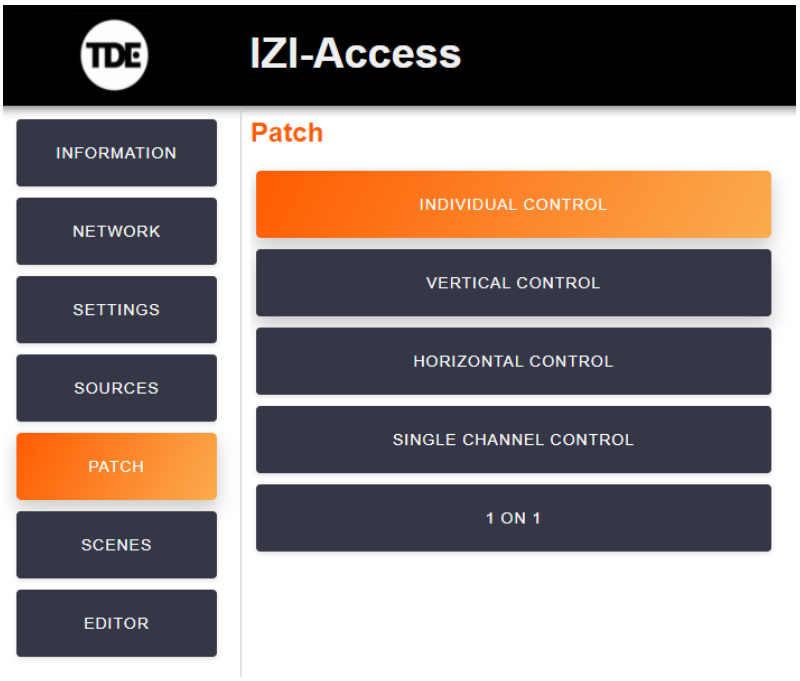
Providers

The providers will hold more info about the sender or last initiator of incoming data. For example if source 'Scene' is selected, it will show the active inputs that could have initiated the current output. If sACN is selected, the IP address of the sending device will appear.

Clear

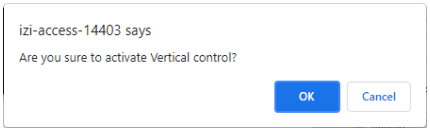
Manual clear is clear all values set via the web page or via the IZI-Supervisor. Scene clears activated scenes activated by any source (inputs, web page, IZI-Supervisor).

Patch



The patch menu option gives the ability to activate created patches. The patches must be created with the IZI-Supervisor.

When a value is selected a question will pop-up if you are sure, to avoid switching patches by accident.



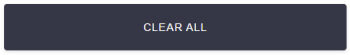
It is possible to only load this page, without the menu buttons on the side, by using the patch.html.

For example: http://izi-access-manual.local/patch.html

Scenes

The scene menu option gives the ability to activate created scenes. The scenes must be created with the IZI-Supervisor. All activation will be done with a 2 second fade time with priority High.

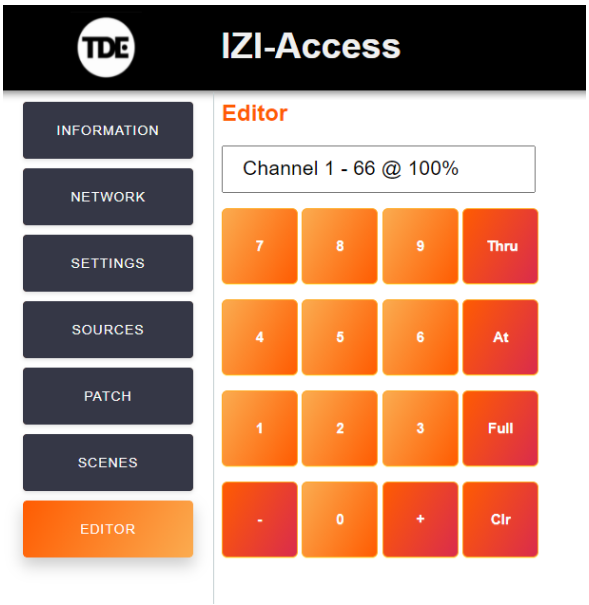
At the bottom of the scene list the ‘Clear all’ button is present, to clear all scene data.



It is possible to only load this page, without the menu buttons on the side, by using the scene.html.

For example: http://izi-access-manual.local/scene.html

Editor



The editor can be used to change the levels of channel 1 to 512.

It is possible to only load this page, without the menu buttons on the side, by using the editor.html.

For example: http://izi-access-manual.local/editor.html

Numeric

The numeric keys can be used to type the channel number or the level.

Clr

The Clear button can be used to clear the editor (first press). The second press will clear all channels set above 0% with the editor.

Full

The full button will set all selected channels in the editor to 100%.

At

The At button can be used to assign a level with a multiple of 10%. Pressing it twice will result in 50%.

Thru

To select a range use the 'Thru' button, to complete range can be set to selected level at once.

-

Go to previous channel (-1) and set this channel to the current level and set the current value to 0%. When a range is selected to range will be made smaller, channels that 'fall out' of the range will be set to 0%.

+

Go to next channel (+1) and set this channel to the current level and set the current value to 0%. When a range is selected to range will be made larger, added channels will be set to the selected level.