

# Concept Pro



**16**  
Channels

HUMAN &  
VEHICLE  
DETECTION

OBJECT  
TRACKING &  
COUNTING

BUSINESS  
INTELLIGENCE

ONVIF  
COMPLIANT

## DL PLUS-4/8/16

Deep Learning Plus Expansion device available in 4, 8 or 16 Channels

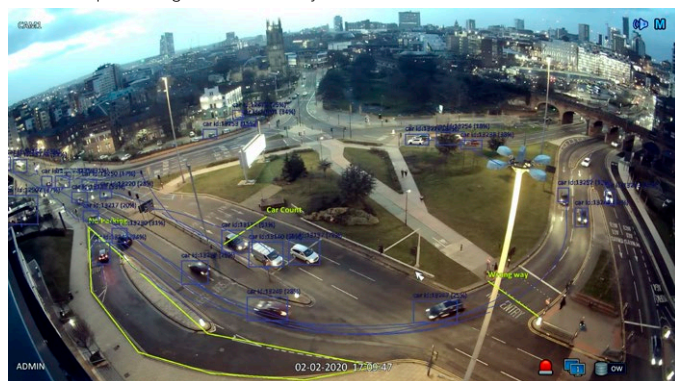
Deep Learning Plus is an exciting, immensely powerful expansion device that can provide up to sixteen channels of deep learning.

The Deep Learning Plus expands these capabilities much further by allowing tracking and behavioural rules to be set. The Deep learning Plus device allows multiple rules to be set on any given channel and has advanced features such as drawing a shape or line with as many sides as you need to ensure the area drawn fits the detection area perfectly.

The intelligence of this technology also ensures accuracy in its analysis, detecting Humans and Vehicles at speed and distance.

Capable of pulling statistical event data, Deep Learning Plus also offers excellent business intelligence.

Actual Deep Learning PLUS Live Analytics screenshot



### KEY FEATURES

- ◆ 4, 8 or 16 Channels of Deep Learning Video Analysis
- ◆ 3 Powerful Operating Modes (Companion, Universal, Event Server)
- ◆ Compatible with ONVIF Devices, up to 8MP Resolution
- ◆ Up to 80 Custom Deep Learning Rules
  - ◆ Line Crossing, Intrusion Detection, Area Entry Detection, Area Exit Detection, Loitering Detection, Stopping Detection, Object Counter, Occupancy Detection
- ◆ Person, Car, and Bike Object Identification
- ◆ False Alarm Filtering with Double Knock Conditions
- ◆ Plug-in Free Web User Interface
- ◆ Deep Learning Statistics for Business Intelligence
- ◆ Optional add-on licences for a growing selection of powerful deep learning algorithms and features, including occupancy counters with door control, social distancing measurements, face recognition, licence plate recognition, mask detection, and many more.

### DL PLUS OPERATION MODES

#### COMPANION MODE

- ◆ Connect with compatible Concept Pro recorders.
- ◆ Configure Deep Learning rules from recorder
- ◆ Detected objects display in recorder Live Event timeline
- ◆ DL events triggered by recorder
- ◆ Search by event type from recorder

#### UNIVERSAL MODE

- ◆ Connect with compatible Concept Pro recorders
- ◆ Configure Deep Learning rules from DL PLUS web UI
- ◆ More advanced configuration & event trigger options
- ◆ Configure event metadata to transmit to recorder
- ◆ Detected objects display in recorder Live Event timeline
- ◆ DL events triggered by recorder and/or DL PLUS
- ◆ Search by event type from recorder

#### EVENT SERVER MODE

- ◆ Compatible with ONVIF recorders & IP cameras via RTSP streams
- ◆ Configure Deep Learning rules from DL PLUS web UI
- ◆ More advanced configuration & event trigger options
- ◆ Adds Deep Learning layer to existing installations with Advanced event triggers

# DL PLUS-4/8/16

Concept Pro 4/8/16 Channel  
Deep Learning PLUS

Concept  Pro

## SPECIFICATION

| DEEP LEARNING ALGORITHMS                          |   |
|---|---|
| <b>Detector</b>                                   | Deep Learning-based Object Detection & Identification<br>Human, Car & Bike Object Identification<br>Max. 80 Rules   |
| <b>Tracker</b>                                    | Multi Object Tracking   |
| <b>Optional Licences</b>                          | Face Recognition, Mask/Sunglass Detection, Gender Detection, Licence Plate Recognition, Enhanced Human/Vehicle Detection, Human Detection (Fisheye Camera), Human Detection (Thermal Camera), Active Privacy Masking, Safety Helmet Detection, Fallen Person Detection, People Counting for Door Control, Auto Loss Rate Correction for Door Control, Social Distance Measuring |
| DL PLUS OPERATION MODES                           |   |
| <b>Companion Mode</b>                             | Connect with compatible Concept Pro recorders<br>Configure Deep Learning rules from recorder  |
| <b>Universal Mode</b>                             | Connect with compatible Concept Pro recorders<br>Configure Deep Learning rules from DL PLUS web UI  |
| <b>Event Server Mode</b>                          | Compatible with ONVIF recorders & IP cameras<br>via RTSP streams<br>Configure Deep Learning rules from DL PLUS web UI   |
| DEEP LEARNING EVENT TRIGGER                       |   |
| <b>Deep Learning Rule Detection Triggers</b>      | General: Intrusion, Occupancy (Custom set to trigger at a specified number, entering, exiting or loitering)*, Loitering, Stopping, Area Enter/Exit, Line Crossing<br><br>Advanced (Optional): Combined Counter, Social Distancing, Face Recognition, Mask/Sunglass, Licence Plate Recognition   |
| <b>Deep Learning Object Counting Triggers</b>     | Object Counting (Line, Zone, Queue/Occupancy) Event Counting  |
| <b>System Trigger*</b>                            | Alarm Input, Recurrence (Schedule)  |
| <b>False Alarm Filter</b>                         | Yes (Object Exclusion Areas*, Object Size Filter, Confidence Threshold, Ignore Static Object, Double Knock Alarm Condition)   |
| <b>System Arm/Disarm*</b>                         | Yes (Schedule/Manual)   |
| <b>Event Conditions</b>                           | Schedule (Always/Custom), System Arm/Disarm*, DL PLUS/NVR Alarm Input (Double Knock), Other DL Rule*  |
| DEEP LEARNING EVENT ACTION                        |   |
| <b>Network Event Actions</b>                      | E-mail Notification, HTTP Command (including companion Android application for live updating occupancy), TCP Command (Basic, JSON, XML, Custom Templates), FTP Snapshot Upload, S3, ONVIF Metadata & Encoding Profile   |
| <b>System Event Actions</b>                       | System Arm/Disarm*, DL PLUS/NVR Alarm Output, ONVIF Audio Backchannel, Video Pop-up, RS-485 (Basic, JSON, XML, Custom Templates), Counter Reset*  |
| <b>Third Party VMS Event Actions*</b>             | Genetec, NxWitness, Control   |
| <b>NVR/DVR Event Actions*</b>                     | Sequinet Metadata Transmission to Compatible Concept Pro Recorders (Event Data, Panic Recording)  |
| <b>Event Snapshot</b>                             | Yes, with Configurable +/- Snapshot Time Settings*  |
| <b>Statistics*</b>                                | Event Trigger Counting (By Channel, Trigger, Hour/Day), Exportable by CSV, Periodic Report by E-mail  |
| DEEP LEARNING MARKETING FOR BUSINESS INTELLIGENCE |   |
| <b>DL Counters</b>                                | Configure Separate Counting Zones (Line Crossing or Area Enter/Exit) for Target Objects (Person, Car, Bike)   |
| <b>Counter Data Format</b>                        | JSON, CSV   |
| SEARCH & EVENT LOGS                               |   |
| <b>Search DL Events from Recorder</b>             | Yes, in Companion & Universal Modes (By Channel, Rule Type, Object Type, Custom Metadata Filter)<br>Object Thumbnails Displayed in Live Event Timeline  |
| <b>Search DL Events from DL PLUS</b>              | Yes, in Universal & Event Server Modes (Export by CSV)  |
| <b>DL PLUS System Log</b>                         | Yes, in Universal & Event Server Modes (Export by CSV)  |

| USER INTERFACE                                       |  |
|--|--|
| <b>Web UI</b>  | HTML5 Web UI (No Plug-in Required)<br>Live Video & System Setup  |
| <b>API</b>   | ONVIF, HTTP REST   |
| VIDEO  |  |
| <b>Max. Video Inputs</b>                             | DL PLUS-4 - Max. 4 Channels<br>DL PLUS-8 - Max. 8 Channels<br>DL PLUS-16 - Max. 16 Channels                                  |
| <b>Max. Video Source Resolution &amp; Frame Rate</b> | Max. 24FPS @ 8MP<br>Max. 48FPS @ 4/5MP<br>Max. 100FPS @ 2MP  |
| <b>Video Source Method</b>                           | ONVIF Auto Discovery, RTSP Video Stream  |
| <b>Supported Video Compression</b>                   | H.265/H.264  |
| <b>DL PLUS Display Output</b>                        | HDMI x1 (Live Video Only)  |
| <b>Display Resolution</b>                            | Max. 1920x1080   |
| <b>Annotated Video Output Stream</b>                 | DL PLUS-4 - 4 + 1 (Channel 0 Encoding)<br>DL PLUS-8 - 8 + 1 (Channel 0 Encoding)<br>DL PLUS-16 - 16 + 1 (Channel 0 Encoding) |
| <b>Video Output Streaming Method</b>                 | RTSP over TCP, RTSP over Websocket   |
| SYSTEM   |  |
| <b>Supported Network Protocols</b>                   | IPv4, IPv6, DHCP, Link Local Address, RTSP, TCP, HTTP, HTTPS, NTP,   |
| <b>Enhanced User ID Rules</b>                        | Yes  |
| <b>Enhanced User Password Rules</b>                  | Yes  |
| <b>Auto Logout</b>                                   | Yes  |
| <b>Log</b>   | Event Log, System Log, Face Recognition Log*   |
| <b>IP Filter</b>                                     | Yes  |
| <b>User Management</b>                               | Yes, Administrator/Viewer  |
| INTERFACE  |  |
| <b>Alarm Input</b>                                   | x4   |
| <b>Alarm Output</b>                                  | x1 (Relay)   |
| <b>RS-485</b>  | x1 (Relay)   |
| <b>USB</b>   | x2 (USB 3.0)   |
| <b>Network</b>                                       | DL PLUS-4 - x1 (RJ45 10/100/1000Mbps)<br>DL PLUS-8 - x2 (RJ45 10/100/1000Mbps)<br>DL PLUS-16 - x2 (RJ45 10/100/1000Mbps)     |
| GENERAL  |  |
| <b>System Watchdog</b>                               | Yes  |
| <b>Cooling Fan</b>                                   | NO - Runs with Silent Cooling  |
| <b>Power Supply</b>                                  | DC12V/2A Adapter   |
| <b>Power Consumption</b>                             | Max. 20W   |
| <b>Operating Temperature/Humidity</b>                | 0°C to +40°C (32°F to 104°F) / 10 to 90% NC  |
| <b>Dimension</b>                                     | 200mm x 131mm x 38mm   |
| <b>Weight (Net/Gross)</b>                            | 0.6 / 1.1kg  |
| <b>Certification</b>                                 | CE, FCC, KC  |

## COMPATIBLE WITH

- ◆ VUHDIP-4
- ◆ VUHDIP-8
- ◆ VUHDIP-16

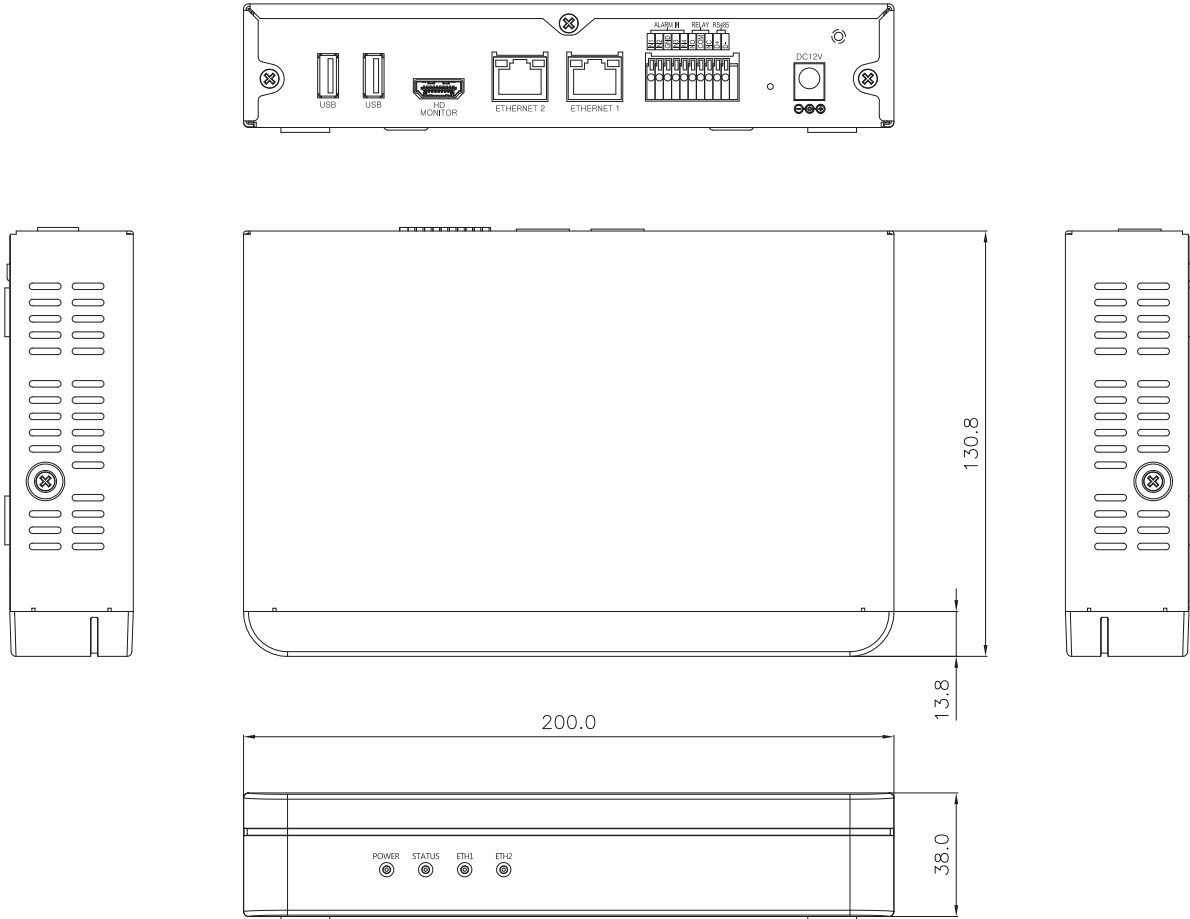


# DL PLUS-4/8/16

Concept Pro 4/8/16 Channel  
Deep Learning PLUS

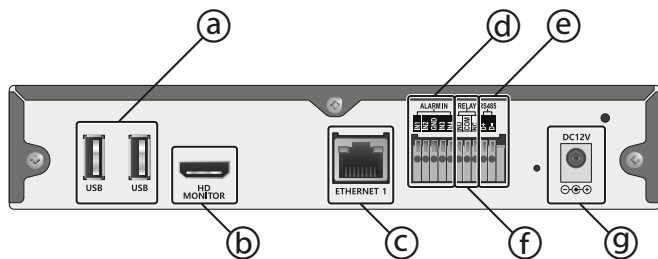


## DIMENSIONS



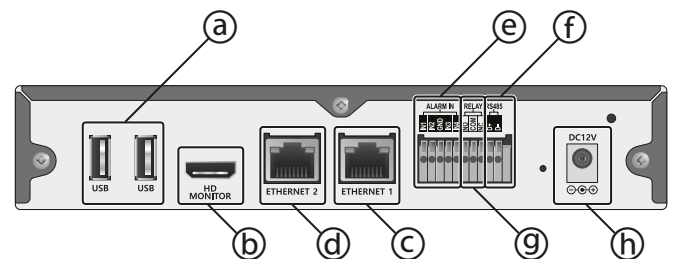
## REAR PANEL

### 4 CH



- (a) USB3 PORTS Universal Serial Bus (USB) ports for additional devices such as USB Mouse
- (b) HDMI PORT For connecting a monitor to view connected cameras. Note, AI Box cannot be configured locally
- (c) ETHERNET 1 RJ-45 port for connecting internet and other platforms such as interoperable VMS, recorders and IP cameras.
- (d) ALARM IN 4 Connectors for alarm input
- (e) RELAY Relay output N/O or N/C
- (f) RS485 Connector for RS-485 devices.
- (g) DC12V Power Plug. Note, DC12V only

### 8CH / 16 CH



- (a) USB3 PORTS Universal Serial Bus (USB) ports for additional devices such as USB Mouse
- (b) HDMI PORT For connecting a monitor to view connected cameras. Note, AI Box cannot be configured locally
- (c) ETHERNET 1 RJ-45 port for connecting internet and other platforms such as interoperable VMS, recorders and IP cameras.
- (d) ETHERNET 2 A RJ-45 port for separate LAN environment devices, IPCs are recommended to connect.
- (e) ALARM IN 4 Connectors for alarm input
- (f) RELAY Relay output N/O or N/C
- (g) RS485 Connector for RS-485 devices.
- (h) DC12V Power Plug. Note, DC12V only

# DL PLUS-4/8/16



Concept Pro 4/8/16 Channel  
Deep Learning PLUS

## AVAILABLE ALGORITHMS MATRIX

| BUILT IN LICENCING  |   |  |              |
|---|---|--|--------------|
| ALGORITHM OPTIONS   | Description   | Compatible Devices / Product code                |              |
| <b>HUMAN/VEHICLE DETECTION NORMAL</b>   | Able to trigger intrusion, line crossing, enter/exit, occupancy, loitering, and stopping detection rules for human and vehicles at normal range and speed.                                    | DL PLUS-4<br>DL PLUS-8<br>DL PLUS-16             |              |
| <b>HUMAN/VEHICLE DETECTION FAR</b>  | Able to trigger intrusion, line crossing, enter/exit, occupancy, loitering, and stopping detection rules for human and vehicles at an extended range.   |  |              |
| <b>HUMAN/VEHICLE DETECTION NORMAL (FASTER OBJECTS)</b>  | Able to trigger intrusion, line crossing, enter/exit, occupancy, loitering, and stopping detection rules for human and vehicles at an higher speeds.  |  |              |
| ADDITIONAL LICENCING - NO ADDITIONAL HARDWARE REQUIRED  |   |  |              |
| ALGORITHM OPTIONS   | Description   | Compatible DL Plus Devices                       | Product Code |
| <b>PEOPLE COUNTING (REQUIRES HUMAN DETECTION FAR)</b>   | Adds ability to combine enter/exit people counts into a combined occupancy count.   | DL PLUS-4<br>DL PLUS-8<br>DL PLUS-16             | DL-PC-L      |
| <b>THERMAL CAMERA HUMAN DETECTION</b>   | Same functions as included Human Detection algorithm, but optimised for thermal camera video streams.   |  | DL-THERM-L   |
| <b>SAFETY HELMET DETECTION</b>  | Adds ability to detect if a person is wearing a safety helmet   |  | DL-HELM-L    |
| <b>LICENCE PLATE RECOGNITION LOW SPEED</b>  | Adds licence plate recognition at low speeds. Create groups, whitelists and blacklists. Alarms can be specified to occur for a specific number plate group or for unrecognised number plates  |  | DL-LPR1-L    |
| <b>LICENCE PLATE RECOGNITION MID SPEED</b>  | Adds licence plate recognition at mid speeds. Create groups, whitelists and blacklists. Alarms can be specified to occur for a specific number plate group or for unrecognised number plates  |  | DL-LPR2-L    |
| <b>LICENCE PLATE RECOGNITION HIGH SPEED</b>   | Adds licence plate recognition at high speeds. Create groups, whitelists and blacklists. Alarms can be specified to occur for a specific number plate group or for unrecognised number plates |  | DL-LPR3-L    |
| <b>GENDER DETECTION</b>   | Adds ability to trigger intrusion, line crossing, enter/exit, occupancy, loitering, stopping detection rules for male/female.   |  | DL-GEN1-L    |
| <b>FALLEN PERSON DETECTION</b>  | Adds ability to detect if a person has fallen over  |  | DL-FALL-L    |
| <b>ENHANCED VEHICLE DETECTION</b>   | Adds expanded Vehicle object classification, including car, truck, bus, bicycle, and motorbike.   |  | DL-VEH-L     |
| <b>ACTIVE PRIVACY MASKING</b>   | Automatically pixelates humans detected in the field of view.   |  | DL-PIXEL-L   |
| ADDITIONAL LICENCING - HARDWARE REQUIRED  |   |  |              |
| ALGORITHM OPTIONS   | Description   | Compatible DL Plus Devices                       | Product Code |
| <b>FACE RECOGNITION</b><br>Requires additional hardware   | Adds face recognition to the Deep Learning Plus device. Create groups, whitelists and blacklists  | DL PLUS-4-FR1<br>DL PLUS-8-FR1<br>DL PLUS-16-FR1 | DL-FR-L      |
| <b>FACE ANALYSIS &amp; MASK DETECTION (requires face recognition)</b><br>Requires additional hardware | Adds ability to detect mask, faces being covered and if sunglasses being worn.  |  | DL-FA-L      |
| <b>SOCIAL DISTANCE MEASURE (requires face recognition)</b><br>Requires additional hardware            | Adds ability to trigger events when people are not observing a set social distancing rule.  |  | DL-SD-L      |

**Note:** Up to 80 DL Triggers can be configured for up to 16 channels. Each channel can have one Algorithm in use. For accurate detection, the following minimum detectable object size relative to total camera field of view should be observed:

| Minimum Object Size for Intrusion & Occupancy Detection |        |        |         |        |
|---|--------|--------|---------|--------|
| Object Type   | Person |        | Vehicle |        |
|   | Width  | Height | Width   | Height |
| Human/Vehicle – Far                                     | 1.00%  | 3.00%  | 2.00%   | 1.50%  |
| Human/Vehicle – Normal                                  | 1.25%  | 4.50%  | 3.00%   | 2.25%  |

| Minimum Object Size for Loitering, Enter/Exit & Line Crossing Detection |        |        |         |        |
|---|--------|--------|---------|--------|
| Object Type   | Person |        | Vehicle |        |
|   | Width  | Height | Width   | Height |
| Human/Vehicle – Far   | 1.25%  | 5.00%  | 3.00%   | 2.50%  |
| Human/Vehicle – Normal  | 2.00%  | 6.00%  | 7.00%   | 6.00%  |

| Minimum Object Size for Installations >3M High (Normal Algorithm) |  |        |        |         |        |
|---|--|--------|--------|---------|--------|
| Camera Tilt Angle   | Trigger Rule                                   | Person |        | Vehicle |        |
|   |  | Width  | Height | Width   | Height |
| Within -30°   | Intrusion, Occupancy                           | 1.25%  | 4.50%  | 5.00%   | 2.50%  |
|   | Loitering, Line Crossing, Enter/Exit, Counting | 2.00%  | 6.00%  | 7.00%   | 6.00%  |
| -30 to -45°   | Intrusion, Occupancy                           | 1.70%  | 5.00%  | 8.00%   | 3.00%  |
|   | Loitering, Line Crossing, Enter/Exit, Counting | 2.50%  | 7.00%  | 10.00%  | 4.00%  |
| -45 to -60°   | Intrusion, Occupancy                           | 2.50%  | 6.00%  | 13.00%  | 5.00%  |
|   | Loitering, Line Crossing, Enter/Exit, Counting | 3.00%  | 8.00%  | 20.00%  | 7.00%  |
| -60 to -75°   | Intrusion, Occupancy                           | 3.50%  | 5.50%  | 30.00%  | 9.00%  |
|   | Loitering, Line Crossing, Enter/Exit, Counting | 4.00%  | 7.00%  | 33.00%  | 10.00% |