



**Complete Airfield Ground
Lighting Solution**

Honeywell Airport Systems GmbH

Electrical Components for Airfield Lighting Systems

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About Honeywell

Honeywell is one of the internationally leading suppliers for superior airport solution products and systems. In the past 90 years, we have outfitted over 500 airports worldwide.

Our product scope includes:

- Components for runway and taxiway lighting
- Control and monitoring systems
- Surface movement guidance and control systems
- Visual docking guidance systems
- Components for obstruction lighting

Honeywell is renowned throughout the international aviation business for innovation, reliability, and integrity.

Our customers benefit from solid and long-time project management experiences and comprehensive system know-how. With Honeywell they have a technically leading and future-oriented partner at their side.

Electrical Components from Honeywell

Especially for the supply, control, regulation, and monitoring of airfield lighting systems, Honeywell offers a broad range of products - from series transformers to digital constant current regulators with integrated individual lamp control and monitoring.

Our products always represent the latest technologies and are renowned for their high reliability and precision.

All our electrical components are in compliance with the respective national and international recommendations and standards (ICAO - International Civil Aviation Organization, FAA - Federal Aviation Administration of the USA, IEC- International Electrical Commission, and EN - European Norm).

Our devices are low-maintenance and characterized by their robust and lasting construction.

Product Information und Documentation

For more detailed information about our products and systems, we provide individual data sheets and other product brochures.

Our concise manuals include all information regarding installation, operation and maintenance as well as troubleshooting and spare parts for the respective components.

Trainings

As for all our products, we provide our customers with comprehensive trainings (theoretical and hands-on practice) for our electrical components, which can be held on-site or in Wedel, Germany by our own trainers:

- CCR 10 digital, CCR 25 digital, and CCR 30, incl. transformer modules TRM 08
- Analog Measurement Unit CAM-AME 2
- Approach Sequence Flash Light System SFL
- Control Unit CCU 7
- Traffic Sensor System ISA-2DET

Honeywell ALS

Control and Switch Plant

Function

Honeywell's control and switch plant ALS (Airfield Lighting System) is specially designed for the installation of the supply and monitoring devices for our airfield ground lighting systems.

By combining individual cabinet types, we are able to set up customer-specific control and switch plants with individual functional units.

Design

The ALS cabinets contain 19" plug-in devices, i. e. all control and supply connections are established automatically when a device is inserted into the cabinet.

The ALS 1000 control cabinet includes the constant current regulators CCR 10/25 digital (page 4-5), the Sequence Flash Unit SFU 40 for the approach sequence flash light system SFL (page 8), or the CCU 7 Control Unit for traffic lights/load circuits (page 9).

The ALS 2000 transformer cabinet comprises the transformer modules TRM 08 (page 6), required for the operation of the CCRs. Honeywell provides five different modules with different power ratings. Furthermore, this cabinet can store the Flash Terminal Unit FTU 40 for the SFL System (page 8).

For smaller lighting systems (e. g. heliports), Honeywell offers the 'combi cabinet' ALS 3000, which can include the CCR 10 digital, two transformer modules TRM 08, and the Control Unit CCU 7.

The monitoring cabinet ALS 6000 includes the analog measurement unit CAM-AME 2, the UNIX computer(s) for CMS control (incl. monitor, keyboard, mouse), as well as the network and station bus components.

Other cabinet types store the traffic sensor evaluation units ISA-2DET (page 10), and the low voltage supply.

Honeywell's control and switch plant ALS is designed according to the recommendations of the ICAO, FAA, and IEC and is used to the full satisfaction of our customers worldwide.



ALS 1000



ALS 2000

Main features

- Space-saving, clearly arranged cabinets for up to eight 19" devices
- Automatic connection of supply and control cables (plug-in system)
- Safe and fast replacement of components due to individually fused devices
- Customer-specific control and switch plants due to combination of individual cabinet types

Cabinet types (examples)

- Control cabinet ALS 1000:
 - CCR 10/25 digital
 - Sequence Flash Unit SFU 40
 - Control Unit CCU 7
- Transformer cabinet ALS 2000:
 - Transformer modules TRM 08 (max. five modules)
- Combi cabinet ALS 3000 (for smaller systems, e. g. heliports):
 - CCR 10 digital
 - Transformer modules TRM 08
 - Control Unit CCU 7
 - SPS Modicon control unit
- Monitoring cabinet ALS 6000:
 - Analog Measurement Unit CAM-AME 2
 - UNIX computer(s) for CMS operation
 - Network/interbus components

Honeywell CCR 30s

Constant Current Regulator

for AGL Series Circuits

Main features

- Extensive control, monitoring, and protection functions for AGL series circuits with LED or halogen lamps
- Lockable housing with safety door switch and optional castors
- Eight freely adjustable current steps (1.3 A to 6.6 A) for configuration according to IEC, FAA, or customer specifications
- Precise power adjustment by up to 48 adjustable output voltages, thus
 - high power factor (according to IEC) and efficiency
 - reduced electromagnetic interference (EMC) and crest factor
 - Optional circuit cut-out system for safe maintenance
- Parallel or serial control of the CCR
- User-friendly configuration/calibration by use of CCR's function keys and display (no further equipment required)
- Storage of settings, configuration, and calibration data on replaceable Datakey®
- Continuous indication on CCR's display: Status, current step, output current, operating hours
- Menu languages: English or German (others on request)
- Unrestricted operation with circuit selector switches and individual lamp control and monitoring (e. g. Honeywell SLCM)

Compliance with Standards

- EC: EN 61822 (current edition)
- FAA: AC 150/5345-10 (current edition)
- ICAO: Aerodrome Design Manual, Part 5 (current edition)

Application

The digital constant current regulator CCR 30 is used to supply, control, and monitor constant current series circuits of airfield ground lighting systems.

The microprocessor compares the actual current value of the series circuit with the target value of the selected current step and varies the duty cycle of the IGBT conduction, which adjusts the primary voltage of the power transformer to regulate output load current.

Standard Functions

Types and Current Steps

- Output current freely adjustable between 1.3 A and 6.6 A for all current steps
- FAA class 1, style 1 / 2 (three / five steps)
- IEC style 1 / 2 (three / five steps)
- Eight steps according to customer specifications

Configuration and Calibration

- Storage of modified parameter on Datakey®

Monitoring Functions

- Actual current value (output current = selected step current)
- Open circuit trip (actual current drop - out, $I = 0$)

Fail Safe Operation

- Storage of latest current step command at mains failure

Measurement and Indication Functions

- CCR's operating mode and status

Parallel Feedback Signals Optional Functions

- Serial I/O Interface (SIO, Ethernet)
- Measurement and Indication Functions (only with SIO)

Single Lamp Control and Monitoring (SLCM)

Circuit Cut-Out System

- Reliable cut-out switch for safe maintenance operations



CCR 30s

Honeywell TRM 08 Transformer Modules for CCR 10/25 digital

Function

The TRM 08 is used to adjust the power of constant current series circuits and can be operated with our regulators CCR 10/25 digital or the analog series ALS-CCR 10/25.

The TRM 08 generates the output voltage for the connected circuit by means of two separate secondary coils. Each secondary coil is equipped with four taps, which are used to set the output voltage and adjust the working point of the CCR to the load of the circuit.

The TRM 08 is designed for phase control operation at 6.6 ARMS output current and can be used for series circuits with or without individual lamp control and monitoring (SLCM).



TRM 08

Design

The following components are assembled on the basic module:

- Power transformer
- Current transformer (detects the circuit's current)
- Surge arresters
- Capacitor for basic compensation
- Circuit cut-out system for isolation and grounding of the series circuit for maintenance operations
- Optional components:
 - ELFD (Earth and Lamp Fault Detection) for insulation measurement with CCR 10/25 digital, or
 - ISO measurement module for insulation measurement with CAM AME 2
 - CAM AME 2- Circuit cut-out system for isolation and grounding of the circuit
 - Primary voltage transformer for detection of the power transformer's primary voltage for lamp fault detection (LAF) with CAM-AME 2
 - Output voltage transformer for detection of output voltage and output power
 - Series circuit coupler SCC-V3 and SLCM Module V3 for individual lamp control and monitoring (SLCM) with CCR 10/25 digital
 - Additional measurement plug for manual insulation measurement

Main features CCR 10/25 digital

- 19" devices installed in ALS 1000 cabinet:
 - CCR 10 digital: 2 separate regulator units for 1 circuit each
 - CCR 25 digital: 1 regulator unit
- Designed for operation with Honeywell transformer modules TRM 08, TRM 96, TRM 90
- CCR connections and functions compatible with analog Honeywell regulators ALS-CCR 10/25
- Integrated lamp fault detection - LAF

Main features CCR 30

- Lockable stand-alone device (acc. to FAA and IEC)
- Regulator unit and load transformer in the same cabinet

Functions (all CCR types)

- Comprehensive control, monitoring, and protection functions for series circuits (e.g. over-/under-current and actual current monitoring, open circuit, insulation and lamp fault detection, individual lamp control and monitoring)
- Comfortable operation by mode selector switch, alphanumeric display (VFD), and 4 function keys
- No readjustment/reconfiguration after replacement of a CCR
- Operation according to FAA, IEC, or customer-specification
- Operation with 3, 5, or 8 current steps, additional non-illumination-step available for maintenance procedures

Honeywell CAM-AME 2 Analog Measurement Unit

Features

- Monitoring of series circuits
 - Lamp faults (max. 64 circuits)
 - Insulation values (max. 99 circuits)
 - Series circuit current (max. 64 circuits)
- Comfortable webbrowser interface for
 - concise status indication
 - easy device and system calibration
 - detailed indication of measured values
 - precise indication of failures (in addition to failure indication by LED)
 - Series circuit current (max. 64 circuits)
- Ethernet interface for
 - automatic failure reports to CMS
 - remote maintenance
- Optimized calibration algorithms (typically two minutes per circuit)
- Connections compatible with CAM-AME 1

Option

- Redundant network connection)

Function

The analog measurement unit CAM-AME 2 (modular expansion cards in 19" plug-in unit) monitors the connected lighting circuits with respect to lamp and insulation failures, and measures the current of the series circuits.



CAM-AME 2

Design

The CAM-AME 2 includes the following components:

- Lamp failure module LFD
 - Up to four separate LFD modules cyclically compare the actual voltage and current values of the connected circuits with calibrated values and thus detect the lamp failure status.
 - If one of the two configurable thresholds (warning and failure) is exceeded, the respective LED lights up.
 - In remote control, failure reports are sent to the CMS via an ethernet interface for evaluation purposes.
- Insulation module EFD
 - The EFD module controls the operation and sequentially measures the insulation resistance against earth potential. The processing of the measurement voltage and the actuation of the decoder boards is carried out by the coupler module AME-ISO (19" unit inside ALS 2000 cabinet). The measurement voltage is activated by the ISO Measurement Module on the TRM 08.



The CAM-AME 2 can be operated remotely by a CMS or manually (local control). The concise web browser interface (password protected) allows individual calibration of measurement values, configuration of the device, as well as failure and/or operating status indication.

Honeywell SFL48 / SFU48 LED- Flash Lights



SFL48 LED- flash

Features

- Control unit suitable for ALS1000 (Deviation)
- Control unit Plug Compatible SFU32 / SFL40
- Average light intensity of internal main beam >22kcd
- No additional cabling for communication needed
- No additional distribution box
- Very long service life (> 10 years)
- Low maintenance

Variants

- Full Approach (900m)
- Reduced approach (600m)
- Each with / without RETIL
- Just RETIL

Standards and guidelines

- ICAO, Annex 14 (Stand 2009)
- EASA, CS-ADR-DSN (Stand 27.02.2014)

1000m total cable length	NYCWY 4x10RE/10
2000m total cable length	NYCWY 4x16RE/1610 to 95 %
3000m total cable length	2000 m

Overview Connection cable

Technical Data - Photometry

Luminous intensity Flash Light LED-SFL

Average light intensity inner main beam:	22.780,17 cd (Minimum according with ICAO 20.000 cd)
Minimum light intensity inner main beam:	22.780,17 cd (Minimum according with ICAO 20.000 cd)
Minimum light intensity Average main beam:	22.780,17 cd (Minimum according with ICAO 20.000 cd)
Minimum light intensity Outer main beam:	22.780,17 cd (Minimum according with ICAO 20.000 cd)

Honeywell ALS-CCU 7 Control Unit for Traffic Lights and Load Circuits

Function

The Control Unit ALS-CCU 7 is used to supply, switch, and monitor up to three load circuits and/or two traffic lights. The ALS-CCU 7 is installed either in an ALS 1000 cabinet or inside the Switching Control Unit (stand-alone version, standard CCR 30 cabinet). It is controlled either by remote control signals from the tower (normal operation) or manually by means of front panel controls.



ALS-CCU 7

Design

The ALS-CCU 7 is available in three customizable versions:

- Function units 1, 2, and 3 switch one circuit each
- Function units 1 and 2 switch one traffic light each, function unit 3 is not used
- Function unit 2 switches one traffic light, function unit 3 switches one load circuit, function unit 1 is not used.



Switching Control Unit

The layout of the unit's current monitoring board allows lamp fault monitoring, and monitoring of clocked loads (e. g. flashing obstruction lights).

The switching version of the ALS-CCU 7 is determined by programming the respective terminal board inside the control cabinet.

Features

- Monitoring of series circuits
 - Lamp faults (max. 64 circuits)
 - Insulation values (max. 99 circuits)
 - Series circuit current (max. 64 circuits)
- Comfortable webbrowser interface for
 - concise status indication
 - easy device and system calibration
 - detailed indication of measured values
 - precise indication of failures (in addition to failure indication by LED)
 - Series circuit current (max. 64 circuits)
- Ethernet interface for
 - automatic failure reports to CMS
 - remote maintenance
- Optimized calibration algorithms (typically two minutes per circuit)
- Connections compatible with CAM-AME 1

Option

- Redundant network connection)



Honeywell ISA-3DET Traffic Sensor System

Function

Our traffic sensor system ISA-3DET reliably detects the movement of aircraft and vehicles on runways and taxiways by means of ground sensor evaluations.



ISA-3DET

Design

The system consists of:

- Evaluation unit ISA-3DET (installed in ALS 5000 cabinet)
- Copper cable sensors (embedded in runway/taxiway)
- Standard telephone cable for signal transmission

The evaluation unit ISA-3DET sends impulses to the sensors and evaluates their inductance changes when passed over by aircraft or vehicles.

Depending on the system design, five to eight evaluation units be installed in one 19" plug-in unit. The units can be configured by a service interface at their front panels.

One evaluation unit detects and processes the signals of up to four sensors. The distance between the ISA-3DET units and the sensors can be 3000 m.

Depending on the sensor installation, the system can detect presence, roll-over, size, speed, and direction of moving objects.

Sensors can be embedded in runways and taxiways with a width of up to 65 m.

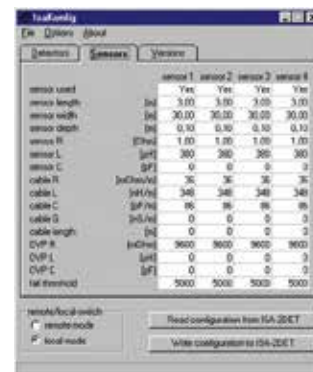
The ISA-3DET units are equipped with a serial and a parallel interface for connection with a CMS.

Features

- Interference-free detection of moving aircraft and vehicles by sensor evaluation
- Enhanced integrity of traffic control by communication interface to radar system
- Single sensors for up to 30 m runway width
- Two sensors for double width (65 m)
- CVD-sensors for detection of aircraft class, velocity and direction (two sensors in defined distance)
- Configurable detection of presence, roll-over, taxiway exit, take-off
- Very short response and trouble detection time
- Continuous self-tests and automatic calibration of the system
- Automatic error detection
- Up to 3000 m cable length between sensor and evaluation unit
- No electronics in the field
- Cable installation across runway joints

Options

- Redundant power supply
- Serial interface for redundant communication with CMS



System configuration

Honeywell NTR Series Transformers for LED and Halogen Lights

Function

The series circuit transformers NTR are used to supply the lights in 6.6 ARMS series circuits (max. operating voltage 5 kV).

The devices allow continuous operation of the circuit even at loss of load on the transformer, and galvanically isolate the lights from the high voltage primary circuit.



ALS-CCU 7

In the event of a lamp failure, the NTR limits the secondary voltage.

At a secondary short circuit (e. g. due to the destruction of a light) the NTR limits the secondary current to the nominal value.

Our transformers are specifically designed for the operation with our individual lamp control and monitoring system SLCM.

Main Features

- Power ratings: 45, 65, 100, 150, 200, 300 W
- Max. operating voltage: 5000 V
- Suitable for LED and halogen lights
- Polyurethane encapsulation
- High efficiency: min. 0.85 or 0.9
- Low leakage inductance -optimized for operation with individual lamp control and monitoring system SLCM

Option

- Earthing connection (E)
- Adapter/extension cables
 - installation in greater distance from the light
 - connection of one light to two or three NTRs

Honeywell CAM-ASD V4 Addressable Switch Devices

Function

The addressable switch devices CAM-ASD V2 are an integrated component of our individual lamp control and monitoring system SLCM.

The SLCM System allows selective switching and monitoring of individual lamps and lamp groups of series circuits.

Depending on the type (CAMASD 1 or CAM-ASD 2), the devices switch and monitor one or two loads (e. g. LED or halogen lights, traffic guidance signs).

Supply, bi-directional CMS communication, software download, and configuration updates are realized via the series circuit cable without any additional interfaces or control cables.

Main Features

- Integrated component of Honeywell SLCM System
- Switching and monitoring of one or two loads in a series circuit

Honeywell CAM-ASD V4 Addressable Switch Devices for AGL Series Circuits with Individual Lamp Control

Main features

- Integrated component of Honeywell's individual lamp control and monitoring system SLCM
- Installation independent of lamp position in the circuit - no manual addressing required before installation
- Supply and bi-directional communication with a control and monitoring system (CMS) via the series circuit cable, no additional control cable required
- Software download and configuration via the series circuit cable, no extra interface required
- Lamp state at power-up of the circuit: ON or OFF
- Automatic activation of a predefined fail-safe state at loss of control signal after 500 ms: ON or OFF or latest lamp state
- Maintenance of lamp state (ON/OFF) at short-term power failure (< 1 s)

Compliance with Standards

- EN 50490 (VDE 0161-106)
- ICAO Aerodrome Design Manual, Part 5 (current edition)
- FAA AC 150/5345-47 (current edition)

Monitoring and Feedback of Lamp State

- Lamp ON (live)
- Lamp OFF (currentless)
- Lamp DEFECTIVE

Application

The Addressable Switch Devices Honeywell CAM-ASD V4 are used for selective switching and monitoring of individual lamps and lamp groups (sections) in AGL series circuits. The microprocessor-driven devices are connected to the secondary side of series transformers and control either one or two lamps..



ASD V4

Design

Types and Current Steps

- Encapsulated in polyurethane resin; all cables vulcanized to the body in a dust- and water-proof manner
- Standard FAA connectors (L-823)
- Type CAM-ASD 1: one lamp connection cable
- Type CAM-ASD 2: two lamp connection cables
- Address label incl. bar code

Functions

Selective Switching of Lamps and Lamp Groups

- Switching of one or two lamps (ON / OFF), like version
 - light with bulb
 - light with LED-lamp

**For more information on these and other
Honeywell Airport Systems products, visit**

<http://www.honeywellairports.com>

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