

SmartControl

Airfield Ground Lighting Control and Monitoring system

Compliant to Latest International Standards

- ICAO Annex 14. Vol 1
- ▶ IEC 61508
- ▶ EASA 139/2014
- UK CAP 168
- ▶ TP312

Applications

From simple CAT I systems through to CAT IIIB Advanced Individual lamp control and monitoring of airfield lighting fixtures

SmartControl

SmartControl



Description

SmartContlor is a state of the art airfield ground lighting control system that can cater for all airport requirements, from a simple CAT I system up to a CAT IIIB ILCMS. This is a modular control system that is infinitely versatile and expandable. SmartControl is a PLC based system, consisting of a number of standard elements, each of which is repeatable and can be 'plugged together' in various combinations. By utilising a topology database to hold all of the airport specific information, the PLC-SmartControl. system allows any airfield modifications to be carried out simply and safely by airport engineers without any need for costly software changes.

How does atg airports guarantee to meet the your requirements?

As part of our quality assurance we adopt a tried and tested process approach to all control system projects. The following key documentation will be completed to ensure our customer's requirements are accurately translated into an operational CMS:-

- User requirement Specification (URS)
- ► Fnctional Design Specification (FDS), showing technically how the CMS will reflect the URS and practically how it will be visualised and controlled
- ► Software Design Specification (SDS) detailing how the FDS will be met
- ► Factory Acceptance Test (FAT) documents issued very early in the process
- Site Acceptace Test (SAT) test and acceptance documents issued very early in the process to the client for comments. The comments will be added to the test specs and re issued.
- Transition Plan to detail how the changes will be safely integrated
- Mandatory Factory Acceptance Test with client representative present.
- Mandatory Site Acceptance Test with client present.

Features

Provides touchscreen or conventional desk operation with remote brilliancy selection and control, standalone or Client Server

- Supports multiple runway control, runway end selection and taxiway to runway conversion
- Control and monitoring of any Constant Current Regulator via Multiwire, Dual Profibus, Dual Modbus TCP, J-Bus 485 or J-bus TCP
- Provides full SMGCS routing using dynamic and preconfigured routing with integral Stopbar control
- Switching and monitoring of individual LED and tungsten halogen fixtures
- ► Easily modified and upgraded by the client, independent of atg airports if suitably trained personnel are available
- Suitable for configurations ranging from one lighting substation / FEC to sixteen as a standard or more if required
- ► Full atg airports after-sales m,aintenance and service support with 24/7 response being available

PLC SmartControl is a modular control system, which consists of standard elements, each of which is repeatable and 'plugged together' in a standard manner in various combinations to achieve the individual system architecture best suited to a specific airport. This is generally influenced by the type of control interface required, the number of substations and the required level of redundancy

The main elements of Smart PLC Control are:

- The user interface (SCADA, Standalone or redundant Server)
- ► The PLC Control, Hot Standby, SAFE or Standard.
- ► The Maintenance -Interface
- ► The Engineering-Interface
- The topology database



enquiries@atgairports.com

2

Airfield Ground Lighting Control and Monitoring system

SmartControl



Maintenance Interface

Smart PLC Control provides a user friendly colour graphical maintenance interface. This includes an overall airfield mimic with screen 'buttons' for selecting/ deselecting services and a substation mimic for each substation showing the status of the PLCs and CCRs. Equipment is shown as green when healthy and red when unhealthy. Clicking on items of equipment (where appropriate), can reveal further information to identify the exact cause of a fault rapidly and intuitively.

				A	arms				
100		1 2 1							
100	1010		170-00	and the second se	Design	Number			
2	404	601120	14:35:21	inde WV Farm	Fault	12401			
Z	97	641128	14/35/21	Sub E2 PLC	Faut	18/24/01			
23	912	641120	\$43521	secondaryCourtsTowerPLC to sub .2	Hut	18/24/01			
24	9/4	66/11/20	4/35/21	iccondary Contro Tower MLC to Jub WE	lut	382401			
2	945	641120	14/12/21	Scenary Cours Rate Lts 050 Filler	Faut	382408			
21	91	641128	143121	High Tower II System Fase	Faut	122401			
21	982	64/11/28	963521	High Towar Losipment Room 1 Feas	Faut	18/24/01			
2	913	(4)1120	943121	High Towar Equipment Room 2 Fuse	Faut	182401			
1	4(1/	641128	163521	High Come Registrant Zoon 1 PSU	Cont Cont	12240			
32	1(1)	601120	1635.21	Mah Taree Featurent 2con 2 PSU	Full	1224.01			
35	1031	661176	163521	High Torrer H System PSUB IC OP	Faul	18,2441			
31	1106	681126	1635.21	Low Tense H System (Rock 0) Prolimet Caramanitations to Low Tenser 10 Ra	Fault	18260			
35	1101	641120	143521	Low Tenes I: System (Rock 0) Proinet Communications to High Tever F. System	aut	112401			
31	1105	641120	163121	Low Texes: F. System [Reck0] Pro Inet Communications to Righ Texes EQR	Fiut	1124.01			
1	110	641128	163521	Low Level 1: System (record) in the Communications to Righ Tower EQH Low Taxas 10 Parts Stor 2 Models	Curt	11/2/01			
2	155	641128	143521	Low Twice 10 Rask Soc 3 Notate	Faut	182402			
40	1111	64/11/28	143121	Low Enec 10 Rask Stor 4 Notate	Faut	18/24/02			
4'	нн	6411120	\$43521	Low Lene: 10 Kask Stor 5 Biofule	hut	102202			
47	1112	64/11/20	94/32/20	Low Tene: 10 Rash Stor & Notate	Faut	182492			
4	m.	6401124	943528	HIGH TOWER H SYSTEM TO KACK S OF 2 MOOD E	Faut	182401			
41	1114	001120	963521	High Cover II Synchron Context Set State Cover		102402			
4	1115	641128	\$43121	High Tower EQ Rices 11C Fask Sof 3 Motule	Fault	18,24.02			
47	1121	641124	14:35:21	High Tower FQ Room 110 Fack Sol 4 Blocale	Faut	18,2402			
48	1121	601120	163521	High Tasse FQ Rices 11C Fack Stot 5 Micrale	Faul	18,24.02			
40	1122	661126	16,35,21	High Tasse FO Dates 110 Fack Sorth Matale	Faul	18,24.02			
61	11/7	101124	16,35,21	Nigh Lover FUTCE in 78,5 and Stor J Boliday		18260			
52	1126	641128	14:35-21	Nah Twee FORson 210 Feak Stat 5 Bodule	Fault	182402			
51	1127	641120	14:35:21	High Tower EQ Rices 210 Fank Slot 6 Bodule	Faut	18/24/02			
51	1121	641120	M3521	Server 2 to PLC Communications Fault	Faut	18/24/02			
55	1130	661128	14:35:21	NORI Comman cathers to Server Fault	-101	112402			
25	1151	641128	14:05:21	Vice communicators to server walk	Faut	152402			
31	HD:	641128	943521	ATCIN Communication to Servici Fault	Hut	382492			
39	102	64/11/28	10/01/20	ATCHO Commancation to Sene: Fast	Faut	312407			
60	1132	64/11/28	143521	ATC108 Comman caddes to Server Faalt	Faut	18/24/02			
61	254)	641120	143521	Sub T16 TIC1 Twy M Load Off Hours Run	Faut	18/24/02			
E.	232	641526	1625.21	Self-W Concerner Water Anno	Fault Court	10/24/07			
6	850	641128	143521	Sub B Generator Not in Ante	Feut	18.24.02			
65	812	661126	1635.21	Sada Ph Malan	Faut	18,24.02			
64	1172	05/11/28	\$0,3121	Server 110 PLC Communications Fault	Can tilleally	14146			
67	938	15/11 24	15:32:01	Printing Stream Relationarian PC to Savid	Fau thealing	(49-2)			¥
hrsa	21 11	6014.003	Window 8	Ack 194					
Am Ack Expert Archive Commo Office Am Ack James Versoer Active Archive Archiv									

Comprehensive maintenance data and statistics are available from the maintenance workstation.

The information accumulated can include:-

- Hours run
- Hours failed
- Brilliancy hours run (for each level)
- Number of switching operations

Since the information is logged into an SQL database, powerful relational database queries can be easily performed.

Engineering Interface

The engineering interface is provided for the system manager, and handles housekeeping and "Black Box" log interrogation. Housekeeping includes such activities as database saving/ retrieving and archiving. Black Box log interrogation includes the ability to call up the stored logs of every control system activity. Individual button presses can be traced right through the command cycle, including back indications.

Topology Database

Conventional control systems bury the information about the system configuration, such as which lights are adjacent, CCR configuration etc, making changes difficult and risky.

Smart PLC Control eliminates this problem by adopting a SQL based topology database. This powerful tool holds all the airport specific information in a user friendly environment. This allows the user to edit this information in a safe manner and automatically cross checks it to prevent errors.

This means that extra circuits and CCRs can be easily added by suitably trained airport staff without the requirement for software changes in many cases.



Control Equipment

The workstations and PLCs are distributed around the lighting substations for enhanced security and are linked together by a highly reliable "self healing ring" of optical fibre.

Smart Hardware

The hardware used in SmartControl is a blend of proven, powerful workstations, PLCs with failsafe and standard I/O.



 \bowtie

3

SmartControl

SmartControl

Airfield Ground Lighting Control and Monitoring system



Typical System

Full Redundancy AGL Control System consists of an A Centre S7 1500H PLC System, Multiple ATC Touch Screen SCADA system Siemens Professional Duel Redundant Server / Client and S7 1500 Safe B Centre PLCs to control the airfield lighting equipment.



Airfield Ground Lighting equipment is controlled and monitored by a mixture of standard and safe B Centre PLCs.

- ► AGL Constant Current Regulator
- ► Smart Switch Unit (ILCMS Field Device)
- ► DC AGL light Switch.
- ► AGL Constant Current Regulator Circuit Selector
- ► Auxiliary AGL Services Windsock, Beacon, Strobe Approach



 \boxtimes

4

SmartControl



Head Office: atg airports ltd Lowton Business Park | Newton Road Lowton St. Mary's | Warrington WA3 2AP | United Kingdom

atg airports reserve the right to change technical data and details at any point in time. Errors may have occured



SmartControl

S +44 (0) 1942 68 55 55

 \boxtimes

enquiries@atgairports.com Rev 1 - 2025

5