Crane Control System - ASTAT®

Powerful, responsive and accurate control of industrial cranes in all types of environment. For both new and retrofit installations.

ASTAT® for industry!

ASTAT, with slip-ring motors, has become the leading technology for new heavy industrial cranes in the growth regions of the world.

In Europe, ASTAT is mostly used for retrofit installations or when normal industrial drives are unable to fulfil the requirements.

We supply ASTAT solutions for applications up to 4000 A or 4700 kVA.

The ASTAT Digital Crane Motion Controller has better control and information properties compared to earlier controllers. Equally important is the focus on quality of hardware components. The digital controller can be mounted on a steel plant crane in hot countries such as India without extra cooling or air conditioning. This capability provides additional benefits to worldwide industrial crane users.

i.e. The crane control system must withstand dirty, hot and cold environments in addition to difficult power supply systems. This has forced us to integrate functions like brake control, time relays, logic control and thermistor relays into the ASTAT controller. Generic products with the same robustness as the ASTAT controller are difficult to find. With this level of integration we offer a complete, fully tested motion control system.

Slip-ring motors may be produced with small internal rotor losses. This is important in crane applications with multiple motors and a high demand for good motion control. As well as being ideal for crane applications, slip-ring motors are low on maintenance with brushes being exchanged only every 5 to 10 years.

ASTAT uses the slip-rings for measurement of the rotor frequency and from this calculates the speed. In most cases no tachometer or pulse encoder is necessary.

The operator controls the crane motion, while all rotor contactors are optimized by ASTAT, as an integrated part of the current control. This results in dramatically reduced wear of contactors and crane mechanical parts. Crane maintenance costs will therefore be reduced.

Advantages with ASTAT®:

- Fewer and better components result in more up-time.
- Operational diagnostics will speed-up fault tracing.
- Multipurpose spares will reduce parts in stock.
- The PC-program for maintenance can be installed in a ground level computer. Nobody has to visit the crane first to find the problem.

Digital ASTAT motion control is superior to other techniques and it increases the operational results to the limits of the crane itself. For you as a user it will create:

- Increased productivity. The operator moves the crane without jogging, i.e. with one single movement.
- Prolonged lifetime. Smooth acceleration and retardation decreases torque peaks.
- Special functions reduce rope and brake wear.
- Satisfied operators. Motion control is possible down to increments of only **one** cm. Try to do such a small step without the ASTAT system!
- Excellent control features permit higher speed during automatic control.

When to select ASTAT® ?

ASTAT is suitable for crane control in demanding environments, when larger motor powers must be handled, for retrofits or when automating one or more cranes.

Specifications and facts about ASTAT®

Operation limits

Voltage:	Nominal -30% ...+10%.
Current:	See below.
Frequency:	50 Hz ±10 Hz, 60 Hz ±10 Hz
Temperature:	-25(-40)ºC w/o heating +70 (+85)ºC w/o cooling continuously (short)
Isolation:	EN60664, Pollution degree 4

Over voltage Protection DASG

5	Voltages: 380-400 V AC, 415 V, 440-480 V, 500-575 V, 690 V

Thyristor Modules DASD

3	Voltages: max. 530 V, max. 600 V, max. 690 V (50 / 60 Hz)
8	Currents: 25 A ... 1000 A crane motor rated current The continuous current (AC-1) is higher than the rated current.
3	Frame sizes: 25-100 A, 200-355 A, 630-1000 A

Control System Modules

Control System Module DARA 1001

2	Voltages 115/230 V 50/60 Hz. Single phase.
2	Thyristor Modules each max. 1000 A (Totally max. 2000 A)
1	RS 232 interface for programming/supervision PC
1	RS 232 for overriding control
1	Opto interface for Master-Follower
1	Opto interface for Optional Control
1	Opto interface for I/O-connection
17	Digital in, 110 V DC (supplied internally)
8	Digital out, relay (for 110 - 230 V AC)
4	Motor PTC inputs
4	Analog in, +/- 20 mA or +/- 10 V
2	Analog out, +/- 10 V
2	RS 232 for intelligent transducers
1	Incremental pulse encoder
4	Rotors for speed feedback / rotor monitoring
0 - 3	Remote I/O "Cabin I/O"

Remote I/O DAPM 100 "Cabin I/O"

8	Digital in, 24 V DC
8	Digital out, 24 V DC, transistor
2	Analog in, +/- 20 mA or +/- 10 V
2	Analog out, +/- 10 V

Feedback Module DADT

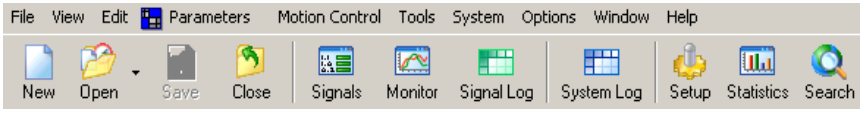
1	Rotor, max. 600 V rated rotor voltage

Functions

22 Main groups

I/O units and Factory test	Selectable DO
Supply information	Load functions
Motor information	Limit switch function
ASTAT configuration	Rotor system
Brake information	Positioning system
Speed feedback	Master-Follower
Speed reference	Motion control logic
Speed regulator	Shared motion
Speed supervision	Two operators stations
Current/Torque regulator	Different parameter sets
Rotor resistor	Fault handling system

Set-up:	With PC. Windows and COM1/ USB port required.
Indication	Two digits, 00 - 99.
Readable	-40 ... + 85ºC



Control data

Reversible stator voltage control, with 0 - 3 rotor contactors.

2	Modes: Scalar speed control or vector based torque control
3	Speed feedback options: Rotor frequency, tachometer, and pulse encoder
10 ms	Speed reference generation and closed speed regulator loop execution
3 ms	Current regulator execution (interrupt controlled)
100 µs	Resolution rotor frequency measurement

Optional Control

Sway Control System

Positioning system for TCP/IP commands

Four-rope grab crane

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