



DRIVES & MOTORS



THE MOVEMENT UNDER CONTROL

The new Esa/Gv servo-system family "Esa-digital MOTION" is composed by:

- ASP Drives and SA Power Supplies
- E Series Sinusoidal Brushless Servomotors
- ED Series Brushless motors with integrated drive

ASP DRIVES

These drives have been developed to be fully integrated with the **Esa/Gv** NCs. This through a digital link and powerful **E-Link Esa/Gv** proprietary protocol.

This modular solution, based on a centralized power supply, it is specifically addressed for multi - axes applications where it minimizes the requirements in terms of total room requested inside the electrical cabinet and in number of auxiliary electro-mechanical components (contactors, protections etc.).

The servo-system family is organized on 2 SA power supply units (11 and 22 KW in S1 service) and on 5 ASP drive models (from 2,5 to 30 Arms - continuous current).

The Power Supply is directly connectable to the main (400 VAC three-phases).

The braking resistor isn't integrated inside the Power Supply to allow its mounting outside the electrical cabinet. For both modules (ASP and SA) it is requested a 24Vdc (-15+ 20%) supply.

OTHER CHARACTERISTICS OF THE SA POWER SUPPLY MODULES:

- Direct management of the main power contactor (it will be closed only if the internal voltages are OK end the DC Bus capacitors correctly pre-loaded)
- Continuous monitor of the main AC voltage, of the DC Bus and of the 24 Vdc
- Module over-temperature output (it will became active when the rectifier bridge reach a temperature of 95°C)
- Monitor to verify the presence and the correct working of the external braking resistor.



MAIN CHARACTERISTICS OF THE INVERTER MODULES (ASP DRIVES):

- Management of two different kinds of motor feedback (Line Drive incremental encoder + Hall sensors and 1Vpp SINCOS encoder)
- Integrated interface for a second transducer (for example an optical line) that can be used by the CN to close, with higher precision, the position loop
- Arranged to maintain powered (through an external 12V battery) only the encoder and the circuitry strictly necessary to maintain the associated position.

This both for the motor encoder and the auxiliary one (if present). So a cheap way to transform in "absolute" the incremental measurement system of the motor, overcoming the usual counting limit of an absolute transducer (normally limited to 4096 motor revolutions)

- Vectorial current control implemented through a last generation DSP (Data Signal Processor). Inside the drive are closed the current and velocity loops with a cycle time of 62,5 and 250 microseconds respectively
- Implementation of the following real time protections:
 - Motor and IGBT I²t with warning and alarm thresholds.
 - Encoder fault and encoder cable breaking or disconnection
 - Motor over-velocity



E-LINK DIGITAL INTERFACE MAIN CHARACTERISTICS

- Serial Synchronized link (with a baud rate of 6,25 Mbit/s). Contemporary transmission of synchronous data (as feed reference, axis quote) and asynchronous data (as instantaneous motor current, Drive heat sink temperature, drive & motor thermal current etc.)
- Physical connection realized through standard Ethernet "CAT5 cross" cables and RJ-45 connectors
- Availability of a 32 bits Windows® tuning SW tool to set-up the servo-system and update the Drive FW (when necessary). This tool will communicate with the drives directly through the E-Link interface

DRIVES TECHNICAL DATA

Drive Model		ASP3	ASP5	ASP9	ASP18	ASP30
continuous current	Arms	2,5	4,5	9	18	30
Peak current (*)	Arms	7,5	13,5	18	36	60
S6 Current (**)	Arms	5,75	10,3	13,5	27	45
Power losses in nominal conditions	W	12	30	72	132	228
Requirements on external $_{24}V_{dc}$	Arms	1				
Module dimensions (H _x W x D)	mm	310x54x255		310x99x255		310x166x255
weight	Kg	3		5		9
working temprature range	°C	from 54 - 40 (from 40° a 55° in applied a “derating” of 1,67% /C°)				

POWER SUPPLIES TECHNICAL DATA

P. S. Model		SA20	SA40
Input Voltage	Vac	400 +/-10%	
Output Voltage	Vdc	565 +/-10%	
Continuous Nominal Power	Kw	11	22
Peak Power	Kw	22	44
Continuous Current	Arms	20	40
Peak Current (*)	Arms	40	80
S6 Current (**)	Arms	25	60
Power losses in nominal conditions	W	53	89
Requirements on external 24Vdc	Arms	0,5	
Minimum value of external braking resistor	ohm	33	9
Continuous Power on external braking resistor	Kw	4	22
Peak Power on external braking resistor	Kw	12	45
Module Dimensions (H x W x D)	mm	310x44x255	310x89x255
Weight	Kg	2	4

(*) Continuous current is guaranteed 8 sec every 60 (during the remaining 52 sec is however supplied a current equal to the 70% of the nominal one)

(**) Continuous current is guaranteed 4 min every 10 (during the remaining 6 min is however supplied a current equal to the 70% of the nominal one)

SA POWER SUPPLY AND ASP DRIVE SCHEMATIC CONNECTIONS

