AUTOSTART 730 (AS730 series)

PROGRAMMABLE GENERATOR CONTROLLER

The Autostart 730 provides for the fully automatic or manual control of a standby generator. The unit has similar control and instrumentation features to the Autostart 710, but with the addition of 3 phase generator voltage and current measurement, display and fault tripping.

Key features

- Automatic, Manual and Program modes, selected by front facia push button keys

- 32 character, back-lit liquid crystal display (LCD)

- Fully programmable generator control options, timers, inputs, outputs and fault protections

- Monitoring, display and programmable fault trips for generator speed/frequency, 3 phase voltage and 3 phase current with IDMT response.

- Comprehensive automatic fault protection system:– up to 5 programmable fault inputs, overspeed, charge fail, emergency stop, and high and low battery volts

- 6 programmable outputs, each with over 40 different function (or 'action') types.

Operation

Control of the Autostart is via 4 front facia keys:-

ON/MODE	Turns on the Autostart and allows selection of Auto or Manual modes.
PAGE	Used to scroll through measured generator parameters, such as 3 phase voltage and current, engine oil pressure and temperature, hours run and battery voltage.
SELECT	Used in the programming of Autostart
OFF	Turns the Autostart off, disabling the generator and resetting any fault condition.

These keys are also labelled with $\triangle \triangledown \triangleright \triangleleft$ symbols, used in the programming of each Autostart (see overleaf). Two front facia LEDs indicate the selected operating mode: green for Auto, amber for Manual.

Control Outputs

Dedicated relay outputs are used for engine fuel and starter motor control. The AS730 has 6 programmable outputs, each of which may be set up for use as one of over 40 function types, e.g. preheat (4 types), engine running, individual faults (e.g. overspeed, overcurrent, start fail, oil pressure, etc.), energised to stop fuel, etc.

Fault Protection and Alarm System

The Autostart 730 has a comprehensive fault detection, warning and automatic response system:-

- Dedicated inputs for low oil pressure and high engine temperature sensors, either switch or analogue type. The use of analogue sensors allows for pre-warning as well as shutdown alarms, and real-time display of oil pressure and engine temperature.

- Three programmable inputs for use with remote fault switches. The inputs can be set to give a warning only, generator load release or shutdown response.

- User set trip levels and response for generator speed/frequency, 3 phase voltage and 3 phase current.

Product Specification

Power supply:

Operating voltage: steady state range	5 – 40 V DC continuous
crank brown-out	to 0 V for >=100mS
Current consumption	typically 200 mA

Inputs:

DC inputs:-

positive input defined as:	*80% to 100% of battery +ve*
negative input defined as:	*–1V to +2V w.r.t. battery –ve*
Input 1 (oil pressure) and	switch (open or closed) or analogue
Input 2 (engine temperature)	(Murphy, Datcon, VDO 5 or 7 bar), wired to –ve DC
Inputs 3 - 5	switch (open or closed), wired to +ve or –ve DC

Generator AC inputs:-

operating voltage range	90 – 300 V AC rms L–N
gen. frequency measurement range	0 – 99 Hz.
gen. frequency display accuracy	<= 2% of full scale
gen. frequency display resolution	1 Hz.

Magnetic pickup:

operating voltage range	7 – 80 V AC rms
frequency measurement range	0 – 10 kHz.
generator RPM display accuracy	<= 2% of full scale
generator RPM display resolution	10 RPM

AC current sensing inputs:

operating range	designed for use with 5 Amp CT's primary ratings 10 to 5000 Amps

Outputs: *(all ratings for resistive load)*

Start and fuel relays	SPNO contacts (switched +ve) rated 16 A max. @ 24 V DC
Programmable outputs 1 – 3	– ve DC (open collector transistor) 250 mA max. @ 33 V DC
Programmable output 4	– ve DC (switched relay) 5 A max. @ 24 V DC
Programmable output 5 (default setting: Common Alarm)	+ ve DC (switched relay) 5 A max. @ 24 V DC
Programmable output 6 (default setting: Gen. Contactor)	volt free SPNO relay 5 A max. @ 240 V AC

Physical:

Overall dimensions (W x H x D)	144 x 96 x 162 mm
Panel cut-out size (W x H)	DIN standard 140 x 92 mm
Weight	approx. 720 g
Operating ambient temperature	–10 to +55 °C

In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at any time.

- Additional fault alarms:-
  Warnings: low and high battery voltage, charge fail and magnetic pickup fault
  Shutdowns: emergency stop, start fail and system fail.

Programmable functions

The AS730 has all the programmable functions found on the Autostart 710 – timers, alarm configurations, trip levels and programmable inputs/outputs – plus the following:-

- Generator under voltage trip, under voltage reset, over voltage trip levels.
- Generator full load current, IDMT response constant and instant trip level.

The Autostart may be programmed by use of the front facia keys: to prevent end-user tampering, entry to program mode is restricted by use of a code number.

The addition of a small RS232 interface allows the AS730 to be connected to a remote (IBM compatible) computer, either directly or over a modem link; Murphy Modex communication software allows a PC operator to program, monitor and control the Autostart from a remote location.
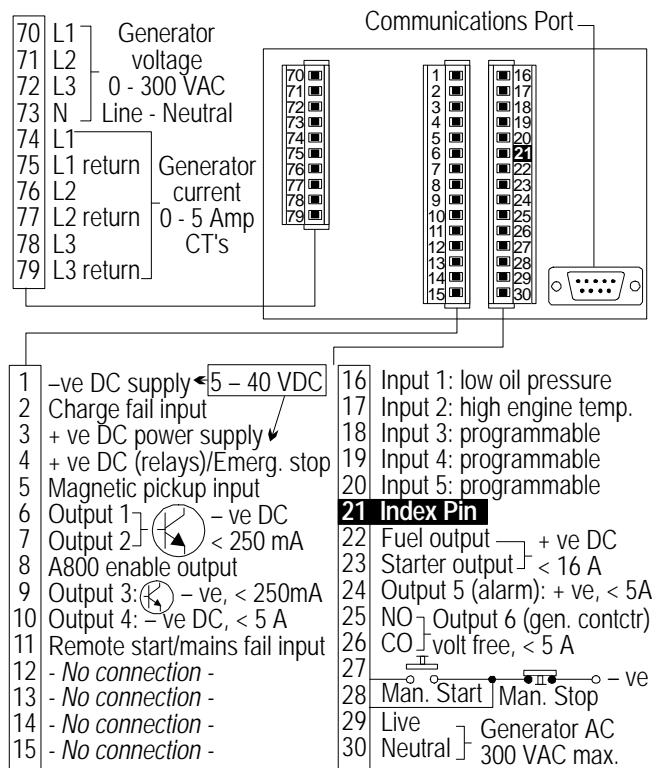
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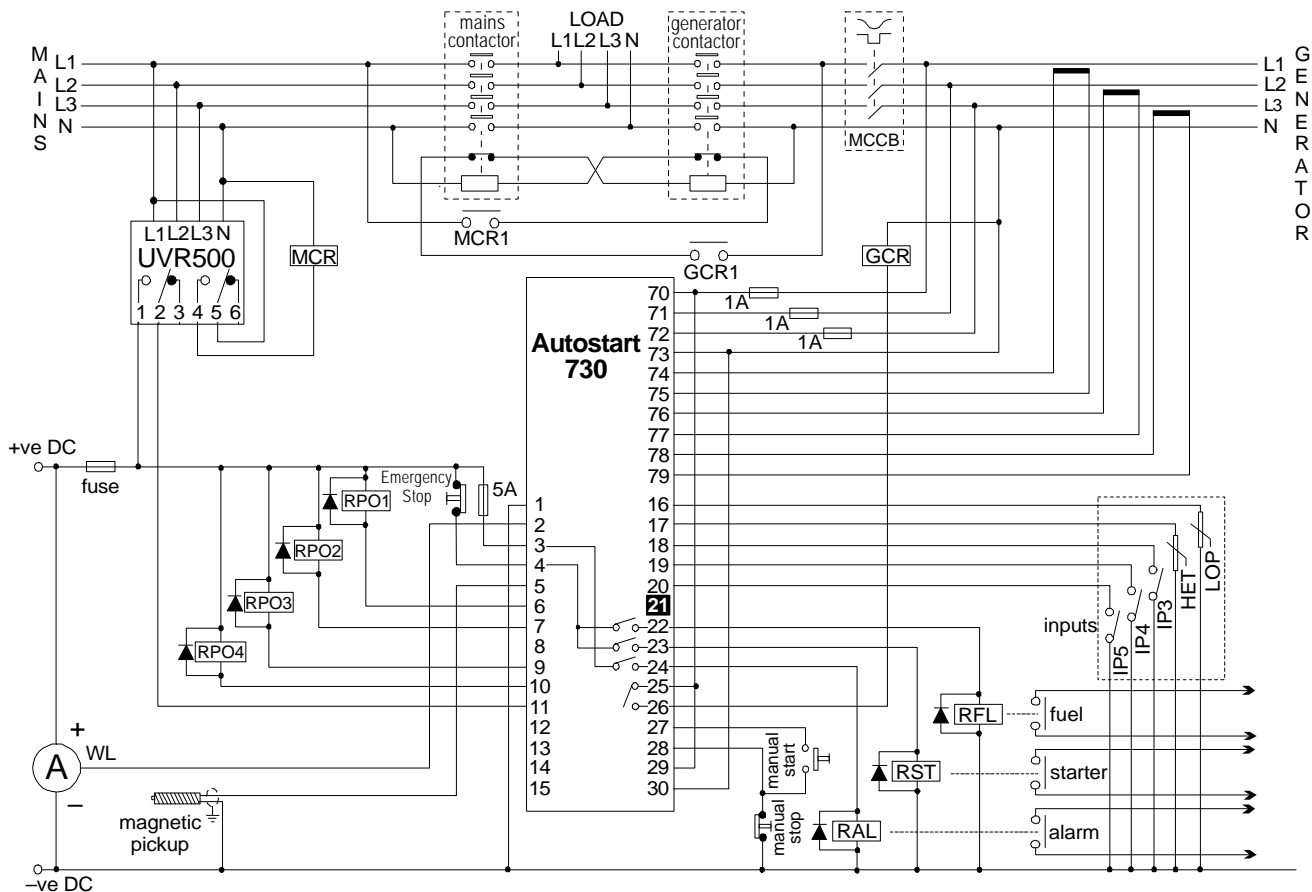
a) Unit type (Autostart 730S)

Accessories:-

AS7CA	9 way (interface) to 9 way (PC) comms lead
AS7CB	9 way (interface) to 25 way (PC) comms lead
AS7CC	Local communications interface
AS7CD	Modem communications interface
AS7CK	AS7xx communication and programming software

Rear Facia & Electrical Connection

Communications Port

70	L1 ⌐ Generator
71	L2 │ voltage
72	L3 │ 0 - 300 VAC
73	N ⌐ Line - Neutral
74	L1 ⌐
75	L1 return │ Generator
76	L2 return │ current
77	L2 return │ 0 - 5 Amp
78	L3 │ CT's
79	L3 return ⌐

1	–ve DC supply ◄ 5 – 40 VDC	16	Input 1: low oil pressure
2	Charge fail input	17	Input 2: high engine temp.
3	+ ve DC power supply ↓	18	Input 3: programmable
4	+ ve DC (relays)/Emerg. stop	19	Input 4: programmable
5	Magnetic pickup input	20	Input 5: programmable
6	Output 1 — ve DC	**21**	**Index Pin**
7	Output 2 < 250 mA	22	Fuel output ⌐ + ve DC
8	A800 enable output	23	Starter output ⌐ < 16 A
9	Output 3: – ve, < 250mA	24	Output 5 (alarm): + ve, < 5A
10	Output 4: – ve DC, < 5 A	25	NO ⌐ Output 6 (gen. contctr)
11	Remote start/mains fail input	26	CO ⌐ volt free, < 5 A
12	- No connection -	27	
13	- No connection -	28	Man. Start ⌐ Man. Stop – ve
14	- No connection -	29	Live ⌐ Generator AC
15	- No connection -	30	Neutral ⌐ 300 VAC max.

Typical Connection