Keystart 9700 series
Engine and Generator Controls

ms6303
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catalogue section 75

- **Manual start/stop**
- **Automatic fault shutdown**
- **Keyswitch operation**
- **Configurable fault inputs**
- **Pin compatible with Autostart series controls**

Description

The Keystart 9700 series provides manual control of a standby generator or engine driven application, plus automatic fault warning and shutdown protection.

The 9700 series is pin compatible with Murphy AS705 and AS710 Autosart units, allowing the use of a common wiring harness and an easy automatic upgrade path.

Key features

- 96 x 96mm DIN standard, front-of-panel mounted case
- Keyswitch operation for enhanced security
- Configurable fault inputs: open or closed, positive or negative
- Switchable 12 or 24 V DC power supply
- Options for overspeed protection (magnetic pickup or generator AC driven), preheat and auxiliary control.

Operation

The Keystart is powered from the engine battery or similar low voltage DC source. A switch at the rear allows for 12V or 24V operation.

Operator control is by a 3 or 4 position keyswitch on the front facia. The key is common to all Keystarts and is removable only in the Stop/Reset (O) position. Control of the engine fuel and starter circuits is by 16 Amp rated positive DC outputs.

The front facia also features five LED pictograms for the indication of engine faults - see overleaf. Fault shutdown switch inputs are provided for engine low oil pressure, high engine temperature and auxiliary/plant fail. Engine overspeed shutdown (magnetic pickup or AC driven) is available as an option. A shutdown 'alarm' output, charge alternator excitation and charge fail warning LED are fitted as standard.

Electrical connection is by two-part screw terminal blocks at the rear.

Warranty

A two year limited warranty on materials and workmanship is given with this Murphy product. Details are available on request and at **www.fwmurphy.co.uk/warranty**

Product specification

Power supply:		
operating voltage:	(12V setting)	(24V setting)
steady state	9 – 20 V DC	18 – 33 V DC
brown out / cranking	<= 5V for 2 secs	<= 10V for 2 secs
current consumption	< 150mA	
Inputs:		
fault switch inputs:	selectable: open or closed, +ve or –ve	
+ve input defined as:	*80% to 100% of + ve DC supply*	
–ve input defined as:	*–1V to +2V w.r.t. – ve DC supply*	
speed sensing inputs:-		
magnetic pickup	10 – 60 VAC peak, < 2300 to > 3400 Hz.	
alternator AC	90 – 350 VAC rms, < 50 to > 60 Hz.	
Outputs:	*(all ratings non-reactive)*	
fuel output	positive DC (switched relay) 16 A max. @ 24V DC	
start output	positive DC (via keyswitch) 16 A max. @ 24V DC	
preheat/auxiliary output	positive DC (via keyswitch) 15 A max. @ 24V DC	
alarm output	negative DC (semiconductor) rated 300mA @ 33 VDC max.	
tachometer / calibration	to suit 0 – 1 mA, 75 Ohm meter output = 0.75mA at rated engine speed	
Adjustable settings:		
fault override timer (VR3)	< 10 to > 30 secs.	
overspeed trip level (VR2)	< 100 to > 130 % of calibrated speed	
General:		
overall dimensions (w x h x d)	96 x 96 x 130 mm	
panel cut-out size	DIN 92 x 92 mm	
weight	approx. 470 g	
operating ambient temperature	–10°C to +55°C	
vibration	1G, 50 Hz to 5 kHz.	
chemical/fire	case: glass filled Noryl, self extinguishing, non-dripping. facia: polycarbonate	

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Front facia

LED fault indication:-

Low oil pressure
High engine temperature
Overspeed, or plant fail on non-overspeed units
Charge fail
Plant fail

3 or 4 position keyswitch:

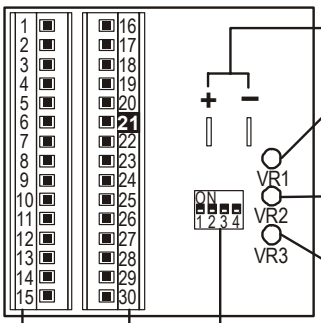
◯ **Off/Reset**. Removes power, stopping the engine and resetting any latched shutdown fault.

| **Run.** Activates the FUEL output. The fault override timer begins as soon as the key is turned (or spring returned) to this position. Once the engine is fully running, Keystart monitors for faults and shuts down the engine if a fault is detected.

|| **Start/crank**. Maintains the FUEL output and activates the START output. Shutdown fault inputs are disabled. This position spring-returns to **I** (run) on release.

||| **Aux/Preheat** ('A' option only) Provides a switched positive DC output (pin 15), used for a preheat or auxiliary control circuit.

Rear facia and connection



Tachometer/calibration output:–
0 – 1mA into 75 Ohm meter

Adjustment potentiometers
Use 3mm flat-head screwdriver
VR1: Nominal speed calibration:–
a) Connect calibration meter
b) run engine to normal speed
c) turn VR1 until meter reads 0.75mA
VR2: Overspeed trip level:–
100 - 130% of nominal speed calibration, clockwise to increase
VR3: Fault override timer:–
< 10 to > 30 seconds clockwise to increase

Switch Settings: ↗=up ↙=down

S1	S2 S3	S4
Not Used	Input fault state:–	Supply:–
	closed –ve ↙ ↙	12 V DC ↗
	closed +ve ↙ ↗	24 V DC ↙
	open –ve ↗ ↙	
	open +ve ↗ ↗	

1	Negative DC power supply	16	Input 1: Low Oil Pressure
2	Charge fail input	17	Input 2: High Engine Temp.
3	Positive DC power supply	✳ 18	Input 3: Plant Fail (9700 only)
4	Aux. input: + DC ('A' option)	19	Input 4: Plant Fail
✳ 5	Mag. pickup input (9701 only)	20	*- No connection -*
6	Alarm output: – DC, 250mA max.	21	**Index Pin**
7	*- No connection -*	22	Fuel output: + DC, 16A max.
8	*- No connection -*	23	Start output: + DC, 16A max.
9	*- No connection -*	24	*- No connection -*
10	*- No connection -*	25	*- No connection -*
11	*- No connection -*	26	*- No connection -*
12	*- No connection -*	27	*- No connection -*
13	*- No connection -*	28	*- No connection -*
14	*- No connection -*	✳ 29	L ┐ Generator AC: 90 - 300 VAC
15	Aux./preheat output: + DC ('A' option only)	✳ 30	N ┘ (9702 only)

✳ *Note:–*
Pin 5 is not used on models 9700 and 9702.
Pin 18 is not used on overspeed models 9701 and 9702.
Pins 29 and 30 are not used on models 9700 and 9701.

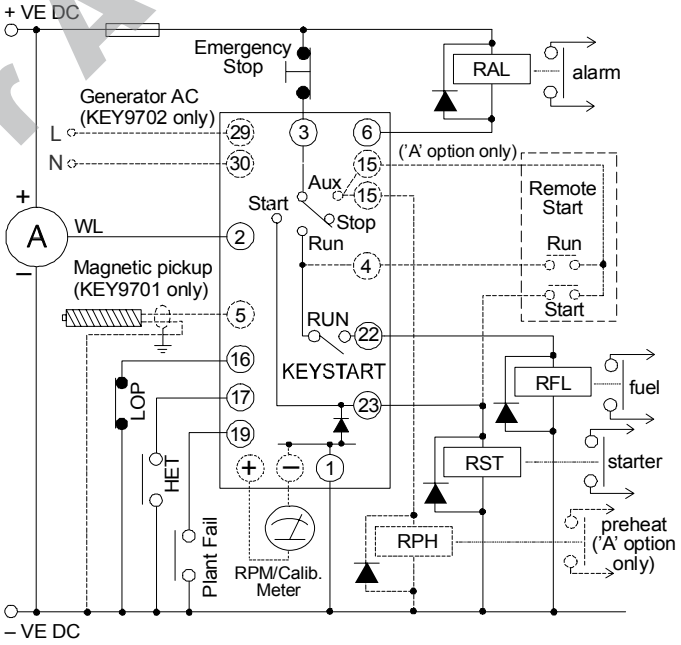
How to order

Stock Code	*Model / Description*
76.70.0002	KEY9700, no overspeed
76.70.0069	KEY9700A, as above plus aux/preheat
76.70.0003	KEY9701, magnetic pickup overspeed
76.70.0028	KEY9701A, as above plus aux/preheat
76.70.0005	KEY9702, generator AC overspeed
76.70.0070	KEY9702A, as above plus aux/preheat

Accessories:-

76.70.0125	Spare keys (1 pair), pre July 2004
76.70.0341	Spare keys (1 pair), post July 2004
76.70.0124	Spare fixing clamps (1 pair)

Typical connection



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