DEIF A/S

Key starter

Type KSE72-1N

4921240029C

- *2 standard alarm inputs*
- *2 customer selectable alarm inputs*
- *Charge circuit indicator*
- *Inhibit of alarms during start sequence*
- *Automatic emergency shutdown of engine*

CE

Application

KSE72-1N is a compact, generally applicable unit for manual start/stop and automatic supervision/emergency shutdown of smaller diesel or petrol engines. For diesel engines with "stop coil" a separate stop relay type SR-1 (see specific data sheet) is applied. The KSE72-1N is CE classified for residential, commercial and light industry plus industrial environment.

The KSE72-1N is without adjustment suitable for both 12V and 24V starting batteries.
A maximum of 4 alarm devices can be connected to the key starter. In case of failure, the LED indicator for the relevant alarm input is lit, the engine is stopped and a signal is transmitted to an external alarm device.

The alarms remain inhibited for 10 s. after start of the engine, to allow e.g. normal oil pressure to be established during this period of time. A pre-exciting current is fed to the charging generator and an LED is lit in case of insufficient charging voltage.

Mechanical construction

KSE72-1N is housed in a robust plastic housing for flush mounting. The key switch is mounted in a solid aluminium plate. The front plate and the 5 red LEDs are covered by a hard-wearing polycarbonate film provided with text on the inside. The rear consists of an epoxy plate with spade plugs (6.3 x 0.8 mm) for electrical connections, provided with text (terminal No./designation).

Key switch

The key switch can be set in 3 positions:

”START”	Starts the engine. When the engine starts the key is released which then returns to the "RUN" position (spring loaded).
”RUN”	Normal position when the engine is running.
”STOP”	Manually stops the engine. Reset of alarm after automatic shutdown of the engine upon detection of a failure. The key can only be removed when set to this position.

Inputs

KSE72-1N is provided with 4 inputs for connection of the following alarm contacts:

”OIL SW.”	Oil pressure sensor (too low oil pressure).
”TEMP. SW.”	Termostat (too high engine temperature).
”A and ”B”	Other alarm contacts, e.g. overspeed, low coolant level, etc. Descriptive texts can be filled in using black marking pen.

Activation of alarm inputs

The alarm inputs are activated at either N/O or N/C contact function - determined by the position of the jumper marked "J1" on the rear of the unit. The setting is COMMON to all 4 inputs. See detailed instruction (in English/German) on the side panel of the unit. NOTE: "J1" is mounted (CLOSED) on delivery.

"J1" closed:	An alarm is registered when the first external alarm contact OPENS (N/C). NB: unused inputs should be short-circuited !
"J1" open:	An alarm is registered when the first external alarm contact CLOSES (N/O). NB: unused inputs should be left open!

Outputs

The unit is provided with 4 outputs for connection of the following external components:

"START"	Relay for starting motor (max. 10A DC).
"FUEL/IGN."	Fuel solenoid or ignition coil (max. 10A DC). For stop coils use external stop relay type SR-1 (See specific data sheet).
"ALTERNATOR"	Charging generator (pre-exciting current: 120mA through internal resistor).
"HORN"	For connection of alarm device (max. 10A DC).

Alarm inhibit during start sequence

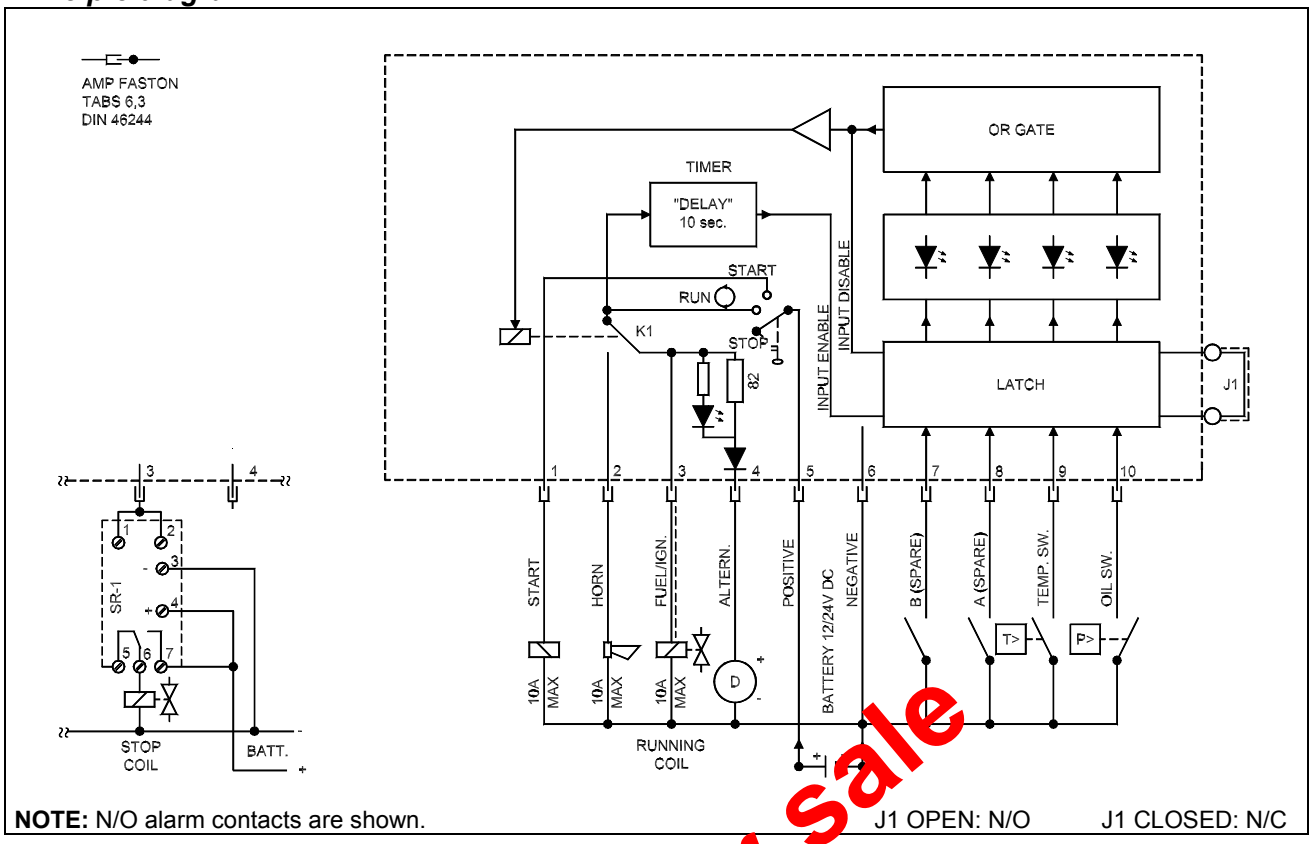
When the key is set to the "START" or "RUN" position, all alarm inputs remain inhibited for the next 10 secs. Unwanted stop of the engine, e.g. due to low oil pressure during the start sequence, is thus prevented.

Emergency shutdown of the engine

If an alarm condition is detected after the above period of time, the LED indicator for the first received alarm signal is lit, the engine is stopped and the alarm horn is activated.

The horn may then be reset by turning the key to the "STOP" position.

Principle diagram



NOTE: N/O alarm contacts are shown. J1 OPEN: N/O J1 CLOSED: N/C

Function

Pre-glowing of the diesel engine (if required) must be carried out before the key is turned from the "STOP" position!

To start the engine, turn the key to the "START" position. This results in:

1) Activation of the starting motor through an external starter relay.
2) Activation of the fuel starting coil and/or the ignition coil.
3) Connection of a pre-exciting current (ca. 120mA) for the charging generator.
4) Inhibit of all alarm channels.
5) Start of the "DELAY" timer.
   If the engine starts, the key is released. It returns to the "RUN" position which results in:
6) Disconnection of the starting motor.
7) Switch off of the LED indicator for the charge circuit, if the generator works normally.
8) Release of all alarm channels after the time delay ("DELAY").

In case of failure in one of the supervised functions, the following steps are carried out:

1) Illumination of the relevant LED indicator.
2) Inhibit of remaining alarm channels (i.e. indication of the first alarm only).
3) Activation of the internal relay ("K1"). The relay contact changes position.
4) Activation of the alarm horn (or the like).
5) Disconnection of the fuel starting coil and/or the ignition coil.
6) Disconnection of the pre-exciting current for the charging generator.
7) Shutdown of the engine.

The alarm is reset by turning the key to the "STOP" position.

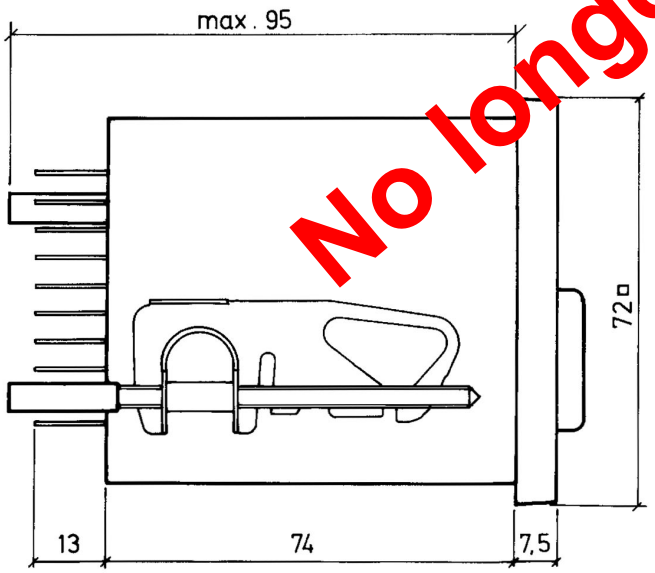
To stop the engine manually, turn the key to the "STOP" position, i.e. steps 5-8 are carried out.

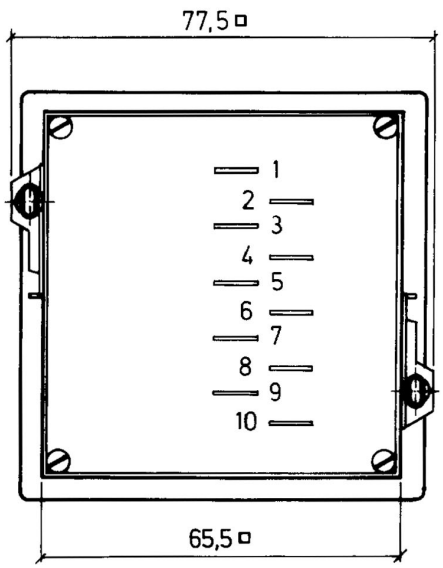
Technical specifications

Auxiliary voltage:	Suitable for both 12V DC and 24V DC. Protected against polarization errors. Functional range: 0..30V DC during start sequence. 9..30V DC after the engine has been started.
Consumption:	Max. 20mA DC (no alarm). Max. 120mA DC (at alarm).
Alarm contacts:	Open contact: 6V DC. Closed contact: 12mA DC.
Outputs:	"START", "FUEL/IGN." and "HORN": Max. 10A DC. "ALTERNATOR": 120mA for pre-excitation of charger circuit. Short-circuit protection, max. 420mA.
Alarm inhibit:	10 s Tolerance: ±2 s.
Key system:	Standard: All units identically coded. 2 keys supplied with each unit. Individually coded key/lock available on request.
Ambient temperature:	-10...55°C (nominal), -25..+70 C (operating), -40..+70 C (storage).
Climate:	Class HSE, to DIN 40040.
Vibration:	3..30Hz: 100 mm/s, 30..100Hz: 1.9 g, to GL + LR: Test 1 and DNV: Class B.
Shock:	15 g, tested 6 times in 3 directions, to IEC 68-2-27, Test: Ea.
EMC:	To EN 50081-1/2, EN 50082-1/2, SS4361503 (PL4), IEC 255-22-1 (class 3).
Plastic materials:	Self-extinguishing, to UL94 (V0).
Connections:	Standard spade plug, 6.3 x 0.8 mm.
Protection:	IP41, to IEC 529 and EN 60529.

Dimensions

All dimensions in mm





KSE-1N Weight: approx. 0.350 kg Panel cut-out: 68 x 68 mm +0.7 to DIN 43700

Order specifications

KSE72-1N
Individually coded keys/lock and front panel to customer design – on request

Due to our continous development we reserve the right to supply equipment which may vary from the described.

DEIF A/S, Frisenborgvej 33
DK-7800 Skive, Denmark

Tel.: +45 9614 9614, Fax: +45 9614 9615
E-mail: deif@deif.com, URL: www.deif.com