

Product Datasheet

High Density I/O Node (p/n 112270)



A Unit of IDEX Corporation
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ES-KEY™

Description

The ES-Key High Density I/O Node (Super Node) consolidates functions of multiple ES-Key modules to reduce node count and simplify addressing which makes it well suited for applications where a centralized node location is required.

Features

- 18 positive polarity solid state outputs (13 Amps each)
- 6 ground polarity solid state outputs (2 Amps each)
- 8 positive polarity digital inputs
- 16 ground polarity digital inputs
- Digital Circuit Breakers on all positive polarity outputs
- Output "open load" detection
- Output LED status indicators
- PWM and FLASH control for outputs
- Incorporated data logger and Universal System Manager
- Programmable special utilities (timers, delays, etc)
- SAE J1939 CAN engine message reception and ES-Key I/O association



Connections

Main logic power is supplied to the Super Node through the 40-pin Deutsch connector (pins 39 and 40). Output driver power is supplied through the two power studs (#10-32 screws and 8 AWG wire recommended). The power stud next to the BLACK 12-pin connector supplies power for outputs 0-9 and the power stud next to the GRAY 12-pin connector supplies power for outputs 10-17. All outputs are located on the two 12-pin Deutsch connectors and all inputs and communication lines are located on the 40-pin Deutsch connector.

Mating connector: Deutsch DT06-12SB BLACK Mating sockets: 0462-201-16141 Wedge lock: W12S Recommended wire gage: 16-18 AWG			
PIN	CIRCUIT	DESCRIPTION	FEATURES
1	Output 7	Positive output (13A max)	FLASH, DCB, OOLD
2	Output 1	Positive output (13A max)	FLASH, DCB, OOLD
3	Output 6	Positive output (13A max)	FLASH, DCB, OOLD
4	Output 5	Positive output (13A max)	FLASH, DCB, OOLD
5	Output 2	Positive output (13A max)	FLASH, DCB, OOLD
6	Output 3	Positive output (13A max)	FLASH, DCB, OOLD
7	Output 4	Positive output (13A max)	FLASH, DCB, OOLD
8	Output 8	Positive output (13A max)	FLASH, DCB, OOLD
9	Output 22	Ground output (2A max)	-
10	Output 23	Ground output (2A max)	-
11	Output 9	Positive output (13A max)	FLASH, DCB, OOLD
12	Output 0	Positive output (13A max)	FLASH, DCB, OOLD

Mating connector: Deutsch DT06-12SA GRAY Mating sockets: 0462-201-16141 Wedge lock: W12S Recommended wire gage: 16-18 AWG			
PIN	CIRCUIT	DESCRIPTION	FEATURES
1	Output 17	Positive output (13A max)	FLASH, DCB, PWM
2	Output 11	Positive output (13A max)	FLASH, DCB, PWM
3	Output 16	Positive output (13A max)	FLASH, DCB, PWM
4	Output 15	Positive output (13A max)	FLASH, DCB, PWM
5	Output 12	Positive output (13A max)	FLASH, DCB, PWM
6	Output 14	Positive output (13A max)	FLASH, DCB, PWM
7	Output 13	Positive output (13A max)	FLASH, DCB, PWM
8	Output 18	Ground output (2A max)	-
9	Output 19	Ground output (2A max)	-
10	Output 20	Ground output (2A max)	-
11	Output 21	Ground output (2A max)	-
12	Output 10	Positive output (13A max)	FLASH, DCB, PWM

FLASH – output flashing capable, DCB – digital circuit breaker feature, OOLD – output "open load" detection, PWM – output pulse width modulation (60% duty cycle, 400 Hz)

Mating Connector: Deutsch DRC26-40SA BLACK Mating sockets: 0462-201-20141 Recommended wire gage: 20-24 AWG		
PIN	CIRCUIT	DESCRIPTION
1	Input 23	Digital input (ground polarity)
2	Input 21	Digital input (ground polarity)
3	Input 17	Digital input (ground polarity)
4	Input 13	Digital input (ground polarity)
5	Input 9	Digital input (ground polarity)
6	Input 5	Digital input (positive polarity)
7	Input 1	Digital input (positive polarity)
8	ADDR 1	Addressing input (ground)
9	CAN Low	ES-Key CAN
10	Supply +	Module supply (+9VDC...+32VDC)
11	Input 22	Digital input (ground polarity)
12	Input 20	Digital input (ground polarity)
13	Input 16	Digital input (ground polarity)
14	Input 12	Digital input (ground polarity)
15	Input 8	Digital input (ground polarity)
16	Input 4	Digital input (positive polarity)
17	Input 0	Digital input (positive polarity)
18	CAN High	J1939 CAN
19	CAN High	ES-Key CAN
20	Supply -	Module supply (vehicle ground)

PIN	CIRCUIT	DESCRIPTION
21	Modem ring	Modem communication
22	Input 19	Digital input (ground polarity)
23	Input 15	Digital input (ground polarity)
24	Input 11	Digital input (ground polarity)
25	Input 7	Digital input (positive polarity)
26	Input 3	Digital input (positive polarity)
27	ADDR 3	Addressing input (ground)
28	CAN High	J1939 CAN
29	CAN Shield	ES-Key CAN
30	SER GND	Serial communication
31	Modem tip	Modem communication
32	Input 18	Digital input (ground polarity)
33	Input 14	Digital input (ground polarity)
34	Input 10	Digital input (ground polarity)
35	Input 6	Digital input (positive polarity)
36	Input 2	Digital input (positive polarity)
37	ADDR 2	Addressing input (ground)
38	CAN Shield	J1939 CAN
39	SER TX	Serial communication
40	SER RX	Serial communication

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Mounting and dimensions

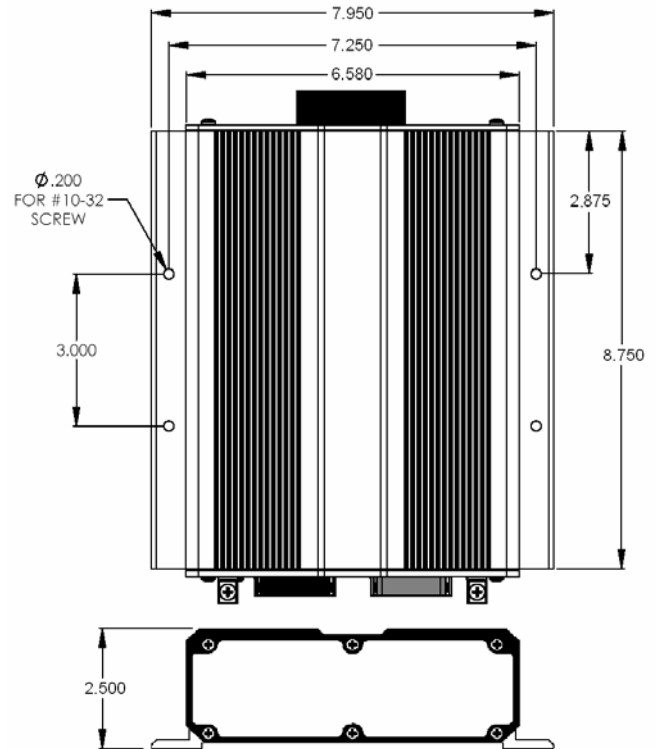
The Super Node is a water tight unit and is mounted using four #10-32 screws. The overall dimensions are (W x H x D, inches) 7.95" x 2.5" x 8.75".

ES-Key addressing

The Super Node's ES-Key network address is selected by connecting a ground wire to one of the addressing inputs on the 40-pin connector. The Super Node uses a pair of ES-Key addresses (0 and 1, 2 and 3, 4 and 5, 6 and 7) because of its extended feature set.

By using this method of harness-side addressing the Super Node can be swapped without having to reset the address on the new unit.

PINS	ADDRESSES			
	0 & 1	2 & 3	4 & 5	6 & 7
8	OPEN	GND	OPEN	OPEN
37	OPEN	OPEN	GND	OPEN
27	OPEN	OPEN	OPEN	GND

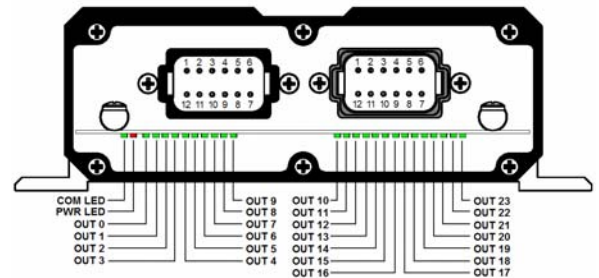


Status LEDs

The Super Node has 26 LEDs located on its front panel (beneath the two 12-pin Deutsch connectors). There are 2 LEDs for power and communication indicators and 24 LEDs for output state indicators.

The green COM LED indicates the Super Node's status.

- On solid - Module on-line
- Flashing slow (1Hz) - CAN bus okay, module not configured for network
- Flashing fast (4Hz) - CAN bus has conflict
- Double flash - ES-Key database is corrupt



Technical details

Product category	ES-Key network
Voltage range	+9VDC...+32VDC
Power consumption	Logic supply+ input (pin 39 of 40-pin Deutsch connector)
@13.8VDC	500mA
@27.6VDC	350mA
Output power	13A per positive polarity output 2A per ground polarity output
Temperature range	-40°C...+85°C
Environmental range	IP 65
CAN specification	SAE J1939 proprietary, 250 Kbits/second
LED	25 green LEDs and 1 red LED for output, power, and communication status Internal thermal fuse (2500mA on pin 39 of 40-pin connector) Reverse voltage protection (pins 39 and 40 of 40-pin connector) CAN buses protected to 24V
Protection	ESD voltage protected to SAE J1113 specification for heavy duty trucks (24V) Transient voltage protected to SAE J1113 specification for heavy duty trucks (24V) Load dump voltage protected to SAE J1113 specification for heavy duty trucks (24V) Outputs protected for short circuit and thermal overload
Dimensions (W x H x D) in inches	7.95 x 2.50 x 8.75