

# DIGITAL ENCRYPTED SECURITY INTERFACE (DESI)

Zero Trust Data Authentication & Encryption



## PRODUCT OVERVIEW

PSG developed a revolutionary module that replaces traditional analog end-of-line resistor supervised loops and completely unprotected switched voltage relay controls with a state-of-the-art miniaturized computational element located within inches of the acquisition or control device. The Digital Encrypted Security Interface (DESI) supplies a strong cryptographic identity for previously unprotected Internet of Things (IoT) devices. DESI upgrades current acquisition and control interfaces gathering authenticated, confidential data from the edge to the enterprise.

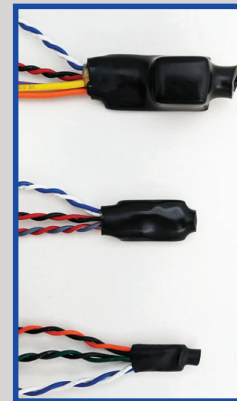
DESI extends data protection and security directly to the fielded component. DESI provides true edge to cloud authentication and encrypted data for sensing and control applications such as Intrusion Detection, Burglary Systems, Access Control, Fire, Supervisory Control and Data Acquisition (SCADA), Building Controls, Automation etc. Current totally unprotected control signals now get a strong cryptographic identity combined with command and control signaling verification. DESI-R and DESI-S devices also feature remote power monitoring capabilities and can signal on loss of device control voltage.

DESI provides a scalable, FIPS-compliant public key cryptography interface (PKI) without need for symmetric key management and overhead. The device can generate private keys internally which are never exposed, not even to the control panel. It supports infinite session-based rekeying, four root chain of trust rekeys events over the life of the device and features write authenticated protection of rekey operations.

The device monitors authentication failures and upon detection of a tamper, responds by sending an alert. The DESI also monitors for side band based attacks and alerts as tamper for these cases.

The module's open architecture approach allows the integration of various manufacturer's devices proving their genuine authenticity, DESI carries a unique identifier that provides supply chain traceability so sensors and electro-mechanical devices can be authenticated as genuine products of their Manufacturer, affording a new level of supply chain visibility and security.

## DESI OPTIONS



### DESI-R

A single form-C (N.O. / N.C.) relay output for controlling electro-mechanical device controller

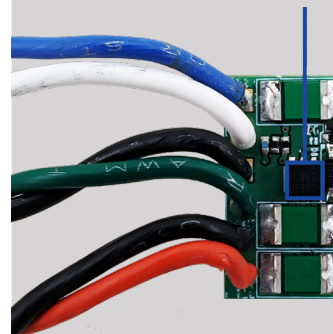
### DESI-S

Single form-A solid state-relay output (N.O.) for controlling low output device controller

### DESI-IN

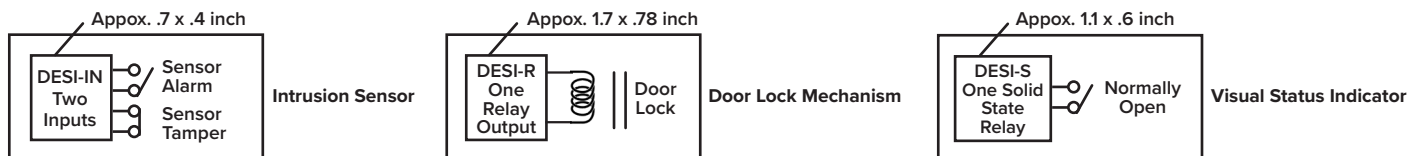
Dual input edge device for monitoring sensors

## DESI CHIP



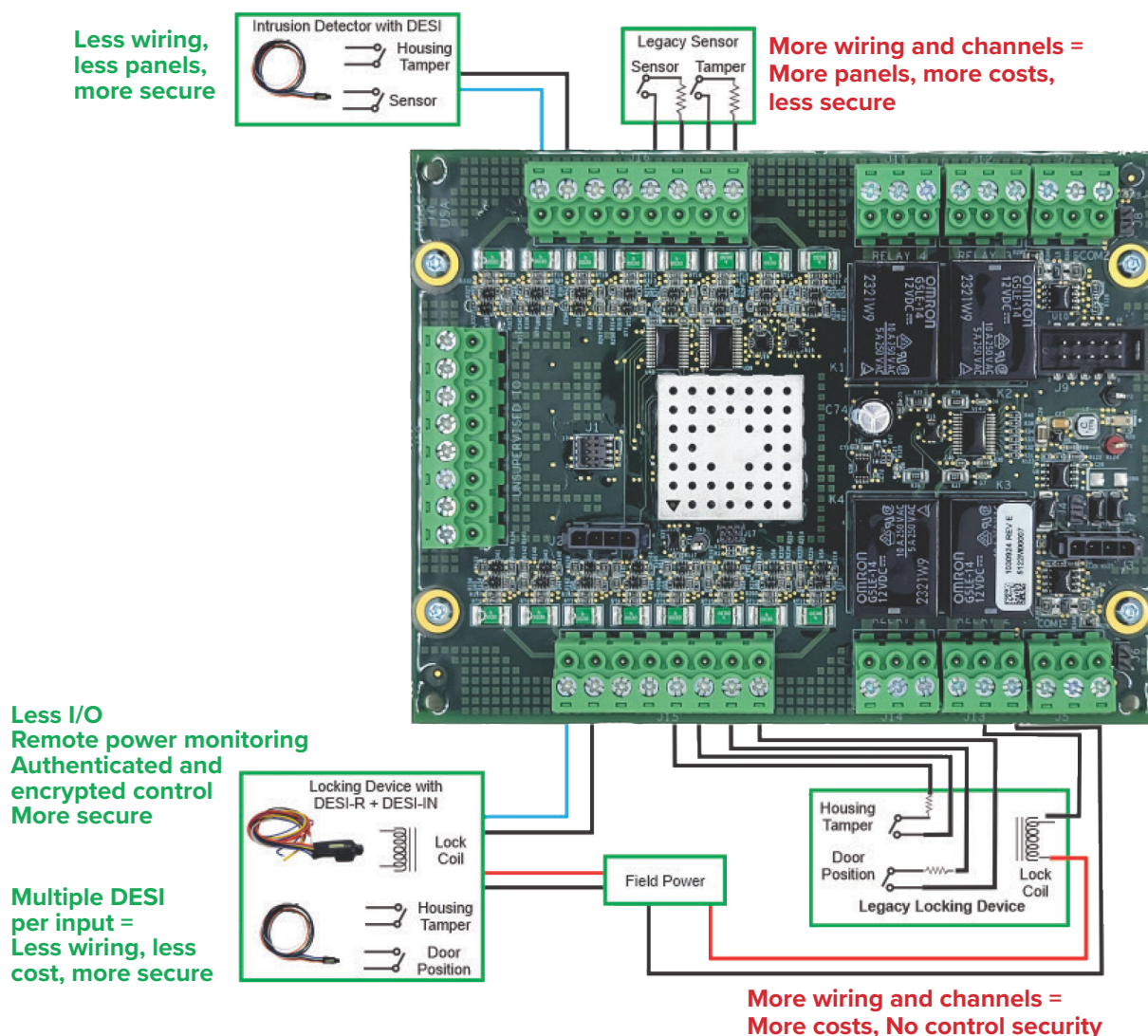
All DESI are deployed over the existing infrastructure and provides data authentication and confidentiality.

## Current Stocked Variants



## DESI Architecture Versus Legacy Analog

### UFP-EM8 Expansion Module



## Specifications

Specification	Description
Number of DESI on a field panel	Up to 64 DESI on a UFP-GW / EM16, 32 DESI on a EM8, any mix.  (4) DESI per single channel is typical, but some channels may have more due to site requirements.  Contact factory for application specific guidance if more than (4) DESI per channel is necessary.
Sensor Inputs	Dry contact with programmable rising or falling edge latch. <i>Shielded variant available for outdoor or ruggedized environmental applications.</i>
DESI-R Control Relay	SPDT, FORM-C, 120VAC/28VDC at 12A (Resistive or Inductive)
DESI-S Solid State Relay	SPST, FORM-A, 30 VDC at 2A
Cryptography; All modules	FIPS-186 ECDSA P256, FIPS-198 HMAC w/ ECDSA, NIST SP 800-90B, SHA-256 OTP, ECC-P256
Key generation	Device can generate private key, which is never exposed, or the private key can be input from external source
Rekeying	(4) root chain of trust rekey operations across life of device. <i>Infinite on demand session rekeying using current PKI</i>
Rekey modes	Open Rekeying, Write Protected Rekeying (requires prior material authentication before device rekeys)
Intrinsic Security Features	Tamper monitoring and alert reporting, active die shield, encrypted key storage
Form Factor	19.6mm x 10.7mm [.7717" x .4213"] (DESI-IN, DESI-IN Shielded) 44mm x 20mm [1.732" x .7874"] (DESI-R) 28mm x 16mm [1.102" x .6299"] (DESI-S)
Mounting	Co-located with sensing element; custom integration with sensor and locking manufacturer housings available – please contact factory
Connection	6" AWG 18 stranded flying lead for DESI communications 6" AWG 18 stranded flying lead for inputs 6" AWG 18 stranded flying leads for power outputs 6" Braided Shield Drain (for DESI-IN Shielded only)
Environmental	-40 to 85C operation, (50C necessary for full rekey operations)
Safety & Qualification Standards	UL294, UL2610, UL62638-2, ROHS
Supply Chain Standards	Made in the USA, NDAA/TAA/BAA <i>Each DESI carries a globally unique identifier to provide supply chain Secure Supply Chain via authenticated inventory.</i>



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