Intellitrol®2+ Overfill Prevention, Ground Verification & Vehicle Identification for Petroleum & Chemical Gantries

Featuring - Dynacheck®, Automatic and Continuous Self-Checking Circuitry.
- Independent Ground Verification Option Capable.

Intellitrol®2+
Overfill Prevention Control Unit

IEC 61508 Certified
SIL 3

The Intellitrol®2+ is designed to serve as a secondary overfill protection system for loading operations. It is intended for use in hazardous locations and is packaged in an explosion-proof (flameproof) enclosure and has US approvals and certifications.

The Intellitrol®2+ performs a variety of monitoring functions and provides a number of outputs to control valves, pumps and other systems including Terminal Automation Systems (TAS). It has an integrated display to indicate system and monitoring status, a bypass capability, and communications for integration with TAS and other systems.

The Intellitrol®2+ contains a pair of microprocessors, each with its own relay, that monitors critical functions. Only when both processors detect a safe condition will both relays close and make outputs permissive.

The Intellitrol®2+ is designed to be Faylsafe® and in the event of a failure (power, sensors, or internal electronics) the unit will enter a non-permissive (safe) state.

This state of the art Dynamic Self-Testing® system controller provides overfill prevention, vehicle ground verification and vehicle identification operating in a single enclosure. The Intellitrol®2+ also provides the user with comprehensive diagnostic information, both locally on the exterior of the control unit housing and remotely to the terminal automation system via RS-485 communications.

FEATURES & BENEFITS

- Overfill prevention, ground verification and vehicle identification in one compact state of the art explosion-proof enclosure.
- Independent ground verification option flexibility including:
  - ability to remove ground from main permit.
  - monitoring good ground status separately via indicators and a relay.
- Scully Dynacheck® automatic and continuous self-checking circuitry.
- Automatic detection of two-wire optic/thermistor or five-wire optic vehicle sensors.
- Monitoring of up to 8 two-wire or 12 five-wire vehicle sensors.
- Complete visual diagnostic display of overfill sensors status. Will not permit loading under any fault or wet sensor condition.
- When used with Scully Sensors, the Scully Intellitrol®2+ Control Unit has been certified as part of a SIL 3 Overfill Prevention System.
- Easy connection to vehicles with rugged high impact industry standard plug and cable units.

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TECHNICAL SPECIFICATIONS

Temperature Range:
• Operating: IC2 Models: -40° to +140°F (-40° to +60°C)

• Storage: -50° to +185°F (-45° to +85°C)

Power Requirements: 100 - 130 VAC (120 VAC Setting) or 200 - 250 VAC (240 VAC Setting. 50/60 Hz, 30 Watts maximum.

Enclosure: Explosion-proof weathertight housing with powder coated corrosion resistant finish. Weather-tight rating: Type 4X and IP 65.

Sensor Inputs: Up to 8 Scully two-wire optic/thermistor sensors (6 or 8 channels) or 12 five-wire optic sensors (maximum). Automatic detection of two-wire vs. five-wire sensors. 3-wire high-temperature thermistor sensors are not supported.

Ground Verification Inputs: The Intellitrol®2+ can be configured via an internal jumper setting to monitor static ground verification based on:
• Ground Bolt/Ground Ball using Scully pioneered Dynamically Self-Testing® ground verification systems only or
• Automatic detection and reporting of the type of grounding. Either resistive ground or Ground Bolt/Ground Ball verification systems.
• Provides a method for setting the acceptable resistance level per API/NFPA for a good vehicle ground connection when automatic ground type detection is selected.

Deadman Input: An intrinsically safe input is provided for an optional Deadman switch.

Outputs: Three outputs are provided as follows:
• Main Permissive Output:
A Form-A (“normally open”) AC relay output with “monitored redundant contacts”. This output closes when all overfill prevention sensors are dry and functional, a proper independent ground connection (optional), and/or vehicle I.D. (optional), and/or Deadman (optional) is established.
This output is an AC control output and must only be used with AC voltage. This output should be used for product flow shutdown capability and is rated at 250 VAC, 5A resistive.

• Main Form-C, Volt-Free Output Relay:
A Form-C (“normally open” and “normally closed”) volt-free redundant relay output contact.These output contacts reverse state (“normally open” closes and “normally closed” opens) when all overfill prevention sensors are dry and functional, and a a proper independent ground connection (optional), and/or Deadman (optional), and/or vehicle I.D. is established. If a volt-free relay output contact is needed, the “normally open” relay output contact may be used for product flow shut down.
The “normally closed” relay output contact is intended for any additional non-critical output status reporting functions. This Form-C contact is rated at 250 VAC, 5A resistive.

• Good Ground or Truck Present Output (non Faylsafe):
An SPST Form A relay is available rated at 250 VAC, 5A resistive.
- When configured to indicate Truck Present via removing J5 1/2, this output switch will close whenever the Intellitrol2+ detects a truck connected, regardless of the Permit status. Typical truck present use is to control a gate to prevent drive-offs while connected to the Intellitrol2+. In this mode, the ground detection will be routed through the main permit output TB2 3&4.
- When configured to indicate ground status via installing J5 1/2 (the default configuration), this output switch will close when the ground is detected as good, and open when faulty (or not detected). The ground status can be jumper configured to be independent of the main permit relay status.
Independent ground relay output is not SIL rated.

Response Time: 450 milliseconds maximum after wet sensor or fault condition.

Communications Port: The communications port is a half-duplex, RS-485 multi-drop communications port, utilizing Modbus™ RTU (straight binary) communications protocol at 1200, 2400, 4800, 9600 or 19200 baud rate; 8 bits; even, odd or no parity.

Approvals: All Intellitrol®2+ units fall under the approvals for:
• FM Approved for the U.S. and Canada: Explosion proof for Class I, Division 1, Groups C and D; with Intrinsically Safe outputs for connection to Class I, Division 1, Group C and D, and Class I, Zone 0, Group IIB, hazardous indoor and outdoor (Type 4X) locations, temperature class T4 at an ambient temperature of -40°C to +70°C.
• NEMA 4X rating, for either indoor or outdoor use and is Watertight, dust tight and corrosion resistant.

Shipping Weight: 31 lbs (14.1 kg). Refer to diagram for dimensions.

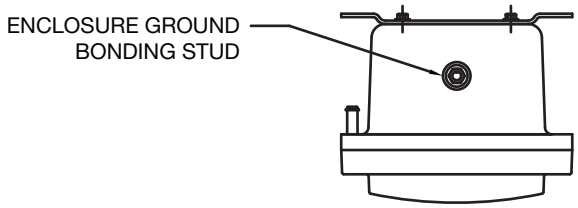
FM C US APPROVED

CE

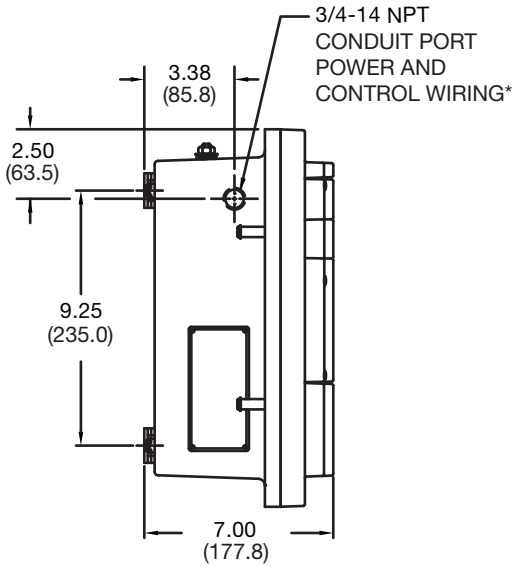
MODEL DESIGNATIONS

Model Designations	*Prefixes*	*Suffixes*		
FM & CSA Approved =	IC2 }–	O Overfill Prevention	iG Independent Ground Verification	V Vehicle Identification

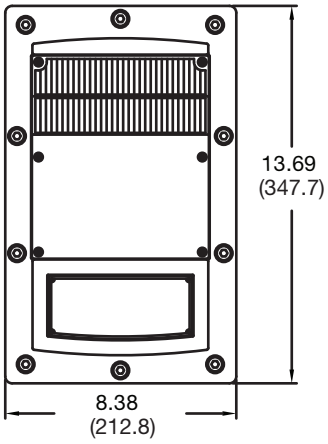
All Dimensions in Inches (Millimeters in Parenthesis)



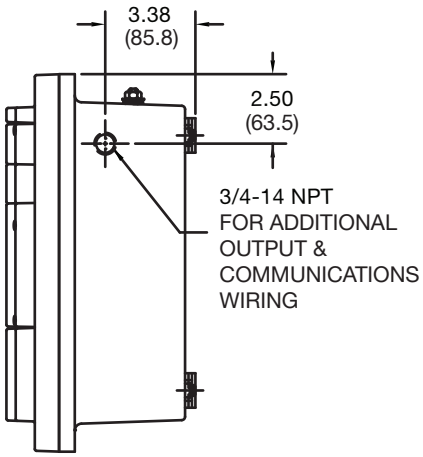
Top View



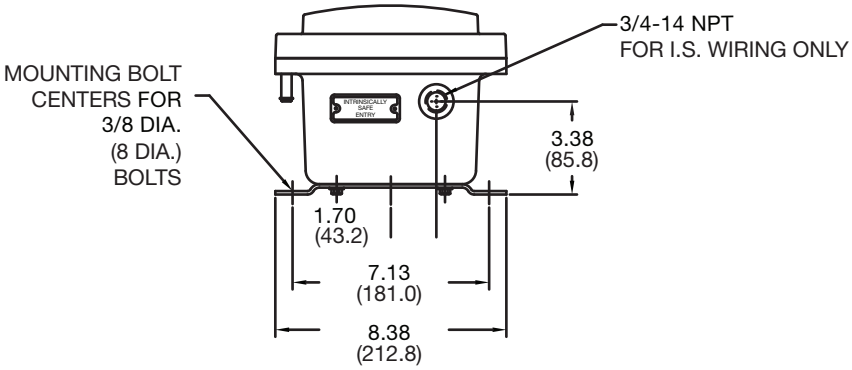
Side View Left



Front View



Side View Right



Bottom View

Intellitrol®2+ Overfill Prevention, Ground Verification & Vehicle Identification for Petroleum & Chemical Gantries

CONTROL UNITS

Description		*Part Number*
IC2 - OiG	Intellitrol2+ including Overfill & Independent Ground	**09549i**
IC2 - OiGV	Intellitrol2+ including Overfill, Independent Ground & V.I.P.	**09550i**

SYSTEM ACCESSORIES

Description	*Part Number*
Bypass Key Authorizer	**08939**
Deadman Control Switch Assembly	**08863**
USB to RS-485 Converter Kit (for communications)	**09001**
SC-8B Sculcon Junction Box, 10 Contacts/ 4 J Slots Green Plug, 30' Orange Coiled Cable	**08677**
SC-8A Sculcon Junction Box, 10 Contacts/ 2 J Slots Green Plug, 20' Orange Straight Cable	**07581**
SC-8A Sculcon Junction Box, 10 Contacts/ 2 J Slots Green Plug, 30' Orange Coiled Cable	**08729**
SC-6A Sculcon Junction Box, 8 Contacts/ 2 J Slots Green Plug, 20' Orange Straight Cable	**07582**
SC-6A Sculcon Junction Box, 8 Contacts/ 2 J Slots Green Plug, 30' Orange Coiled Cable	**08156**
10 Contact, 4 J-Slot Pull-Away Plug (SC-8B) with 30' Coiled Cable	**36159**
Pull-Away Plug Socket for Thermistor	**09569**
SC-6W Sculcon Junction Box, 6 Contacts/ 3 J Slots Blue Plug, 20' Blue Straight Cable	**08139**
SC-6W Sculcon Junction Box, 6 Contacts/ 3 J Slots Blue Plug, 30' Blue Coiled Cable	**08159**
6 Contact, 3 J-Slot Pull-Away Plug (SC-6WP) with 30' Coiled Cable	**09672**
Pull-Away Plug Socket for Optic (SJ-6	**08184**

REPLACEMENT PARTS

Description	*Part Number*
Module Assembly, Intellitrol2+-OiG 120V	**09576i**
Module Assembly, Intellitrol2+-OiGV 120V	**09552i**
Module Assembly, Intellitrol2+-OiG 240V	**09551i**
Module Assembly, Intellitrol2+-OiGV 240V	**09577i**
Cover Bolt, M8 x 1.25 x 25mm	**50005**
Contact Fuse (F5, F8), 5A, Hi-interrupt	**26372**
Cover O-ring (gasket)	**31340**
Corrosion Inhibitor	**4026**
Lens Assembly (with 6 mounting screws)	**08980**
Display Module (with backing plate)	**08981**
Display Cable Feed-through	**08982**
Lens Mounting Screw, 8-32 x 3/4	**50080**
Retaining Ring, Cover Hinge	**54039**
Text Mask (English), Overfill and Ground	**38052***
Text Mask (English), Overfill, Ground and Vehicle ID	**38053***
Heat Sink Assembly	**09481**

***For a diagnostic display panel in a language other than English add -**
"S" for Spanish, "F" for French, "I" for Italian, "D" for Danish or "G" for German

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Dynamic Self-Testing® Overfill Prevention Systems