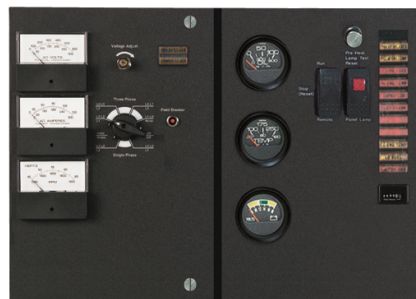


Generator Set Control Retrofit Kits Detector™ 12 (H529)



Detector™ Control System

- Monitors engine performance and AC power output
- Controls generator set start and shutdown
- Automatic remote start
- DC panel lighting
- Vibration Isolators protect control panel electronics and circuitry from generator set vibration
- Analog Instrumentation displays generator set performance. Rugged, non-fluctuating, easy to read

Code Requirements:

National Fire Protection Association (NFPA) standards for essential electrical systems for health care facilities and emergency and standby electric power systems, as well as the National Electric Code (NEC) require that alternate electric power sources, such as emergency generator sets, be equipped with audible and visual signal devices to monitor and warn of malfunctions or alarm conditions. The Detector 12 control used in conjunction with a Cummins Power Generation remote alarm annunciator or audible alarm option (KA08) will meet the signal device requirements of NFPA 110.

Control Package Features

1. Vertical mounting design.
2. Compatible with Onan 1, 5 and 10 light vertical style control housing used on UR, UV and YB Generators.
3. One year limited warranty (parts only).
4. Includes Detector 12 Service Manual
5. Uses standard Detector 12 control wiring diagrams (612- 6488, 612-6489, 612-6490).
6. Complete matrix of feature option kits.
7. Compatible with main line circuit breakers and entrance box kits.
8. Black finish painted control, prime painted control housing. (allows custom painting to match exiting set)
9. Maximum hole configuration in both AC and DC control panels for additional feature options.
10. Available with or without AC meters.
11. Frequency meter/tachometer standard on controls with AC meters.
12. Optional field breaker available (panel allows for interchangeability of existing push button style)
13. Optional AC Rheostat (panel allows for interchangeability of existing AVR matched rheostat)

Includes

- Run-stop-remote switch
- Remote starting, 12-volt, 2 wire or 24 volt, 2 wire
- Coolant temperature gauge
- DC voltmeter
- Running time meter
- Lamp test switch
- Oil pressure gauge
- Fault reset switch
- Cycle cranking
- **12-light engine monitor** with individual 1/2 amp relay signals and a common alarm contact for each of the following conditions:
 - Run** (green light)
 - Pre-warning For Low Oil Pressure** (yellow light)
 - Pre-warning For High Coolant Temp** (yellow light)
 - Low Oil Pressure Shutdown** (red light)
 - High Coolant Temperature Shutdown** (red light)
 - Overcrank Shutdown** (red light)
 - Overspeed Shutdown** (red light)
 - Switch Off** (flashing red light-indicates generator set not in automatic start mode)
 - Low Coolant Temperature** (yellow light)
 - Low Fuel** (yellow light)
 - Two Customer Selected Faults** (red light)

Detector 12 Control Conversion

The following checklist is an aid to what kits or components are required to convert a pre-Detector Onan or Cummins generator set to a vertical style Detector 12 Control. Select the appropriate P/N's of conversion and option kits listed in this brochure.

Note: Option kits listed are designed to fit only vertical style Detector Controls. For horizontal Detector or pre-Detector Control options contact the Onan IBG Technical Marketing Department.

- | | | |
|--------------------------------|--------------------------------|---|
| <input type="checkbox"/> _____ | CONTROL ASSEMBLY | - A complete control box with 12 light monitor board and DC gauges. Does <u>Not</u> include AVR or kits listed below. |
| <input type="checkbox"/> _____ | AMMETER/CT KIT | - Required selection when converting to a control w/ meters (K001 option). |
| <input type="checkbox"/> _____ | CONTROL HOUSING | - Provides sheet metal for control box mounting. Select by style of generator. Not required on UR, UV or YB generators. |
| <input type="checkbox"/> _____ | VOLTAGE ADJUST RHEOSTAT | - Only required if rheostat in existing control is not useable. |
| <input type="checkbox"/> _____ | FIELD BREAKER | - Required if existing breaker is toggle type. |
| <input type="checkbox"/> _____ | ENGINE WIRE HARNESS | - Integrated style 12 light harness for Cummins engines only. Simplifies 2 or 7 light conversions. |
| <input type="checkbox"/> _____ | J1 and J2 CONNECTOR | - Provides Detector monitor board connectors for 10 light harness sets. |

Notes:

1. Prior to conversion, check for necessary voltage regulator and related item mounting modifications required.
2. Detector 12 control packages do not include generator output leads or voltage regulator and are not designed or approved for use on Cummins natural gas G-Drive engines without the express written consent of the Onan Industrial Business Group.
3. Because of the various configurations available on the Onan and Cummins generator sets, engine sender selection is nearly impossible to document. Refer to the appropriate parts catalog for necessary components.

Option Kits (Select as required)

Control Assembly

A complete control box with 12 light monitor board and voltage, frequency & RPM meters ONLY. Does NOT include ammeter/CT kits, automatic voltage regulator or additional kits listed below. (Detector basic controls [first two listed] do not include any meters.)

Kit Number	Instruction Sheet	Remarks
300-4064-02	C522	12 VDC – no meters
300-4064-03	C522	24 VDC – no meters
300-4064-04	C522	12 VDC – 0-300/0-600 dual scale AC voltmeter
300-4065-05	C522	24 VDC – 0-300/0-600 dual scale AC voltmeter
300-4064-06	C522	12 VDC – 0-750 scale AC voltmeter
300-4064-07	C522	24 VDC – 0-750 scale AC voltmeter
300-4064-08	C522	12 VDC – 0-4600 scale AC voltmeter
300-4064-09	C522	24 VDC – 0-4600 scale AC voltmeter

Ammeter/CT Kits

Adds AC voltage, frequency & RPM meters to basic Detector 12 kits above (300-4064-02, -03) ALSO REQUIRES AC ammeter/CT kit (below)

Kit Number (Except DKs)	DKs	Instruction Sheet	Ammeter Scale
300-3365	300-4343	C307	0-25/0-50
300-3366	300-4342	C307	0-50/0-100
300-3367	300-4341	C307	0-75/0-160
300-3368	300-4340	C307	0-100/0-200
300-3369		C307	0-150/0-300
300-3370		C307	0-200/0-400
300-3371		C307	0-250/0-500
300-3372		C307	0-375/0-750
300-3373		C307	0-400/0-800
300-3374		C307	0-500/0-1000
300-3375		C307	0-600/0-1200
300-3376		C307	0-750/0-1500
300-3377		C307	0-1000/0-2000
300-3378		C307	0-1500/0-3000
300-3379		C307	0-2000/0-4000

Control Housing

Provides an Integrated style wrap-around housing in which the control box is mounted. (Not required on sets with UR, U, or YB generators).

Kit Number	Application	Instruction Sheet
300-5327	UC2 (UC22) Frame	C400
300-5328	UC3 (UC27) Frame	C400
300-5042	UC4 (CC4) Frame	C400
300-5043	HC5 (CC5) Frame	C400
300-5044	HC6 (CC6) Frame	
300-5045	HC7 (CC7) Frame	

Control Housing

For early (pre-integrated style) Newage generator (requires 1 each control housing kit and adapter plate)

Kit Number	Adapter Plate	Application
300-3159	319-0934	UC2 Frame
300-3159	319-0935	UC3 Frame
300-3159	319-0010	HC2 Frame
300-3159	319-0011	HC3 Frame
300-3159-01	319-0012	HC4 Frame
300-3159-01	319-0013	HC5 Frame
300-3159-01	319-0014	HC6 Frame
300-3159-01	319-0015	HC7 Frame
300-4195	–	Marathon 680,682,683 Frame

Option Kits (Select as required)

Voltage Adjusting Rheostat

Provides a manual means of adjusting the AC voltage within a +/- 5% range.

Kit Number	Remarks	Application
303-0170	3.5K OHM	UR,UV,YB Generators
303-0261	1.5K OHM	UR,UV,YB Generators
303-0261	1.5K OHM	SX440 Regulator (w/o PMG)
303-0285	5K OHM	MX321 Regulator (with PMG)

Field Breaker

A resettable, push button circuit breaker to help protect the alternator from overheating in the event of excessive exciter field current. Auxilliary contacts can be connected to shutdown the generator set in the event the circuit breaker trips.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
320-1121	K199	3 amp	Onan Generator	—
320-1438	K600	3amp w/Aux.Contacts	Onan Generator	—
320-1688-01	K199	5 amp	Newage Generator	—
320-3782	K600	5 amp w/Aux.Contacts	Newage Generator	C406

Engine Wiring Harness

Includes J1 and J2 engine monitor board sockets. Not required on 10 light sets. (Must purchase through Memphis Distribution Center [MDC])

Kit Number	Application
338-2620	Cummins 4BT Engine
338-2842	Cummins 6BT Engine
338-2626	Cummins 6CT Engine
338-2621	Cummins NT Engine
338-2622	Cummins KT19 Engine
338-2624	Cummins KT38 Engine
338-2623	Cummins KT50 Engine
338-2632	Cummins VTA28 Engine

J1 and J2 Connector Housing

Required to upgrade harness to Detector 12 engine monitor.

Kit Number	Application	Instruction Sheet
323-1640	All	G188

Emergency Stop Switch

Set mounted option is an illuminated push/pull switch. Pushing the switch in will activate an emergency shutdown of the unit. The set mounted switch is reset by simply pulling back into readiness. The remote mounted option is not illuminated, and is a lockout type pull unit. (Resetting of the remote switch must be accomplished with a screwdriver.) Each device has a normally open contact. Circuit wiring is between ground and terminal #16 on TB2 of the engine monitor board which latches the K6 relay, removing power from the fuel solenoid and starting circuit. Both switches require resetting of the set mounted remote and reset switches to enable generator set start. To do this the run-stop-remote switch must be put into the stop position and the reset-lamp test switch pushed to reset. The run-stop-remote switch is then put into the remote position and the genset is now in readiness mode.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
300-4099	K796	Set Mounted	All	C386
308-0906	N/A	For Remote Mounting	All	None

Option Kits (Select as required)

12 Light Conversion

Provides hardware required to convert a 2 light or 7 light Detector control to a 12 light control.

Kit Number	Feature Option	Application	Instruction Sheet
300-3477	H461	EK,EM - Begin Spec P	C317
300-3478	H461	EN, ENA, ENB, ENC	C317
300-3112	H461	ENT,ENTX,ENAD,ENBA	C259
300-3646	H461	DGAB,DGAC,DGAD,DGAE	C326
300-3479	H461	DGCA,DGCB,DGDA,DGDB - Spec A	C317
300-3480	H461	DGCA,DGCB,DGDA,DGDB - Begin Spec B	C317
300-3480	H461	DGBA,DGBB	C317
300-3480	H461	DGEA,DGFA - Begin Spec A	C317
300-3480	H461	DF Series	C317
300-3480	H461	QSG,QSD,QSE,QSF	C317

Lens Options

There are special adders that require lens changes in the 12 light panel.

Part Number	Description	Lens Color
322-0431-01	Overload	Amber
322-0431-02	Pre Het/Lop	Amber
322-0431-06	Basin	Amber

Run Relay

An auxiliary relay board (ARB) contains a single plug-in 3PDT with form "C" contacts relay rated at 10 amps, 240 VAC/30 VDC for use as a run relay, common alarm signal or isolated coil. Two extra relay sockets are provided for additional plug-in relays (purchased separately). Maximum interconnect wire size: 12 gauge. (Stranded)
Interconnect drawing : 300-4228.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
300-4269	KJ02	12 VDC	All	C418
300-4270	KJ02	24 VDC	All	C418

Extra Relays: 307-1058 (12 V), 307-1056 (24 V).

Remote Fault Signal

An auxiliary relay board (ARB) consisting of 12 relays, SPDT with form "C" contact relays rated at 10 amps, 240VAC/30VDC for interface with separately powered remote annunciation. The auxiliary relay board (ARB) also contains a single plug-in 3 PDT with form "C" contacts relay rated at 10 amps, 240VAC/30VDC for use as a run relay, common alarm signal or isolated coil. Two extra 3 PDT relay sockets are provided for additional plug-in relays (purchased separately). Max. interconnect wire size: 12 gauge (Stranded)
Interconnect drawing: 300-4228.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
300-4271	KJ03	12 VDC	All	C418
300-4272	KJ03	24 VDC	All	C418

Extra Relays: 307-1058 (12v), 307-1056 (24v)

Audible Alarm

Provides audible alarm on generator set fault. Can be wired to annunciate on pre-alarm or shutdown faults.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
300-4356	KA08	80 DBA @ 2' @ 24 VDC	All	C425

Option Kits (Select as required)

Low Coolant Level

A sensor mounted in the radiator indicates when coolant level is unacceptable low. Can be connected to provide either warning or set shutdown.

Kit Number	Feature Option	Application	Instruction Sheet
193-0411	H389/H527	All (except Quiet Site)	C311
193-0424	H389/H527	Quiet Site® Sets	C311

Exhaust Pyrometer

Provides analog indication of exhaust gas outlet temperature. Thermocouple(s) is mounted in the exhaust outlet elbow.

Kit Number	Feature Option	Application	Instruction Sheet
300-4206	H244	Cummins B Engine	C403
300-4204	H244	Cummins C Engine	C403
300-4203	H244	Cummins L10,855 and K19 Engine	C403
300-4205	H244	Cummins V28 Engine	C403
300-4202	H244	Cummins K38 Engine	C403
300-4201	H244	Cummins KTA50G1 and G2 Engine	C403
300-4202	H244	Cummins KTA50G3 and G4 Engine	C403
300-4201	H244	Cummins KTTA50 Engine	C403

Tachometer

Provides analog instrumentation of engine speed in RPM.

Kit Number	Feature Option	Application	Instruction Sheet
300-3400	K145	All	C313

Fuel Pressure Gauge

Provides analog instrumentation of fuel pressure at the engine mounted fuel transfer pump.

Kit Number	Feature Option	Application	Instruction Sheet
300-4196	H095	Cummins NT,L10,K19 KT38 & KT50 engines	C402

Oil temperature Gauge

Provides analog instrumentation of lubricating oil temperature in either oil galley or oil pan.

Kit Number	Feature Option	Application	Instruction Sheet
300-3612	K486	All	C321

Option Kits (Select as required)

A.C. Meters

Provides analog instrumentation of set voltage and frequency/RPM with Detector controls. (Does not include ammeter or CT's. Select ammeter/CT kit from chart below.)

Kit Number	Feature Option	Remarks
300-3317	K001	All models w/vertical control. (110V to 480V only.)
300-4339	K001	DK Models (0-480 vac)
300-4338	K001	DK Models (600 vac)
Provides ammeter and CTs for Detector 12 control.		
Sentinel	Detector Number	Ammeter Sale
300-4910	300-3366	0-50/0-100
300-4911	300-3367	0-75/0-160
300-4912	300-3368	0-100/0-200
300-4913	300-3369	1-150/0-300
300-4914	300-3370	1-200/0-400
300-4915	300-3371	0-250/0-500
300-4916	300-3372	0-375/0-750
300-4917	300-3373	0-400/0-800
	300-3374	0-500/0-1000
	300-3375	0-600/0-1200
	300-3376	1-750/0-1500
	300-3377	0-1000/0-2000
	300-3378	0-1500/0-3000
	300-3379	0-2000/0-4000

Wattmeter

Provides analog instrumentation of generator output in watts.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
300-3610	K185	3 Phase	All	C320

Power Factor Meter

Provides analog instrumentation of power factor of the Load.

Kit Number	Feature Option	Application	Instruction Sheet
300-4207	K264	All	C401

Over/Under Voltage Relay

Provides a shutdown of the generator set should the voltage exceed 10% over or 10% under the nominal voltage. A time delay relay is provided, set at 2 1/2 seconds, for momentary fluctuations. An indicating lamp is provided in fault 1 position.

Kit Number	Feature Option	Remarks	Instruction Sheet
300-3358	K881	24 VDC Systems only	C312

Over/Under Frequency Relay

Provides a timed shutdown of the generator set should the frequency exceed 5% over or 5% under the nominal frequency. Reset is set at 3 Hz. over or under. An indicating lamp is provided in fault 2 position.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
300-4199	K906	24 VDC Systems only	50 Hz	C413
300-4200	K906	24 VDC Systems only	60 Hz	C413

Option Kits (Select as required)

Time Delay Start/Stop

Provides a time delay module that delays engine starting by 1 to 15 seconds (adjustable) to prevent needless starts when power outages are momentary, and a time delay module for stopping (adjustable 1 to 30 minutes) to allow engine to cool down by running unloaded.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
307-2607	K634	12 VDC	All	C277
307-2609	K634	24 VDC	All	C277

Excitation Loss Module

Provides a relay to shutdown the set if alternator field voltage is lost.

Kit Number	Feature Option	Remarks	Instruction Sheet
300-4198	K991	12 VDC	C399
300-4197	K991	24 VDC	C399

RFI Shielding

Kit Number	Feature Option	Application	Instruction Sheet
541-0460	B220	Onan Generator	C419
300-4217	B220	Newage Generator	C405

Governor Remote Speed Adjust

Provides a potentiometer mounted on the genset control panel that can adjust the governed speed.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
300-4102	A068	W/Barber Coleman Gov.	QS, EN and DG sets	C369
300-4159	A068	W/EFC Controller	DF Series	C369
300-4160	A068	W/Woodward Gov.	DF Series	C369

VAR/PF Controller

Regulates exciter field current for constant generator set power factor or reactive power.

Kit Number	Feature Option	Generator Set Rating	Instruction Sheet
300-3736-01	K940	0-40 Amps.	C415
300-3736-02	K940	41-90 Amps.	C415
300-3736-03	K940	91-140 Amps.	C415
300-3736-04	K940	141-280 Amps.	C415
300-3736-05	K940	281-475 Amps.	C415
300-3736-06	K940	476-725 Amps.	C415
300-3736-07	K940	726-950 Amps.	C415
300-3736-08	K940	951-1475 Amps.	C415
300-3736-09	K940	1476-2975 Amps.	C415
300-3736-10	K940	2976-3975 Amps.	C415

Cross Current Compensation

Provides a parallel droop compensator for adjusting the share of total reactive load carried by the generator sets. For paralleled sets. Generator set must use MX321 regulator (PMG) with this option.

Kit Number	Feature Option	Remarks	Application	Instruction Sheet
300-3766-01	K611	3 PH. only	Frame HC4	C416
300-3766-02	K611	3 PH. only	Frame HC5,6,7	C416
300-3766-03	K611	3 PH. only	Frame UC2	C416
300-3766-04	K611	3 PH. only	Frame UC3	C416

Parallel Terminal Block

Provides a terminal block and harness for generator set paralleling connections.

Kit Number	Feature Option	Application	Instruction Sheet
300-3752	K904	Onan Generators	—
300-4233	K904	Newage Generators	C410

Option Kits (Select as required)

Torque Match[®] Regulator

The SCR regulator on older models was susceptible to SCR tracking (voltage spikes) caused by non-linear loads which caused irregular regulator response. The Torque Match regulator is of solid state design and immune to SCR tracking.

Kit Number	Feature Option	Application	Instruction Sheet
300-2972	K880	YD and YHB Gens	C229
300-2971	K880	UR and YB Gens	C228
300-2978	K880	UV Gens	C228

Remote Control Mounting Kit

Provides remote mounting of vertical Detector Control up to 30' from generator set installation. An access panel is provided to replace existing set mounted control on the generator set. Terminal blocks and harness plugs are supplied to enable point-to-point hard wiring. Installation requires minimum 14 gauge stranded wire for all interconnection wiring (except K001 CT interconnection - min 10 gauge.) in addition to quantity 1 of 4 wire shielded (min 16 gauge.). Number of interconnection wires is dependent on option configuration.

Caution: AC and DC interconnect wires must be run through separate conduits.

Kit Number	Remarks	Application
300-3759	Requires Qty. 2 of 301-3323 Brackets For wall Mtg.	All

Control Assembly

Senders to support 12 light control

Kit Number	Application
300-4191	N855 Engines



Onan

Onan Corporation
1400 73rd Avenue N. E.
Minneapolis, MN 55432
612-574-5000
Telex: 275477
Fax: 612-574-8087

See your distributor for more information.

WARNING! For professional use only.

Must be installed by a qualified service technician. Improper installation presents hazards of electrical shock and improper operation, resulting in severe personal injury and/or property damage.

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