

# Dupline® Field- and Installationbus Dupline® Lonworks Gateway Type G 3891 0051



- Built-in Dupline® channel generator
- Lonworks transmission media: FTT-10A
- Baudrate: 78 kbps
- SNVT\_switch variables for all 128 Digital I/O
- SNVT\_state\_64 variables to read/write 64 Dupline channels in one variable
- SNVT\_temp\_p and SNVT\_lev\_percent variables for 112 Analink I/O
- Split-I/O mode selectable (128 inputs and 128 outputs)
- For mounting on DIN-rail (EN 50 022)
- LED indicators for supply, Dupline® carrier and fault
- LED indicators for Lonworks: Service, Wink and Module Status
- AC power supply

## Product Description

Dupline® to Lonworks gateway with built-in channelgenerator. The module, based on FTT-10A transmission media, makes Dupline® digital and analog inputs directly available as standard Lonmark network variables. Also, it is possible to control

Dupline® digital and analog signals using network variables. In total, the module offers 242 input variables and 242 output variables. Several Dupline® gateways can be connected to the same Lonworks network.

## Ordering Key

**G 3891 0051 230**

Type: Dupline® \_\_\_\_\_  
 H8-Housing \_\_\_\_\_  
 Type no. \_\_\_\_\_  
 Supply \_\_\_\_\_

## Type Selection

Supply	Ordering no.
115/230 VAC	G 3891 0051 230

## Input/Output Specifications

<b>Lonworks</b> Transmission media Connector Communication Speed XIF-file Dielectric voltage Lonworks – Dupline®	FTT-10A Plug-in screw terminals 78 kbps G38910051.xif ≥ 4 kVAC (rms)
<b>Dupline®</b> Output voltage Output current Short-circuit protection All channels ON detector Output impedance Sequence time	8.2 V ≤ 100 mA Yes Yes ≤ 15 Ω 132.3 ms (@ 128 channels)
<b>Adjustments</b> 1 x 16 pos. rotary switch  DIP-switch 1 DIP-switch 2 DIP-switch 3 DIP-switch 4	No. of Dupline® channels 8 .. 128 in steps of 8 Dupline® mode (Normal/Split I/O) Not used Not used Not used
<b>CE-marking</b>	Yes

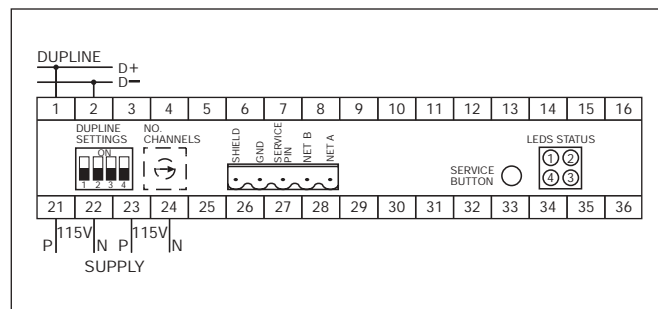
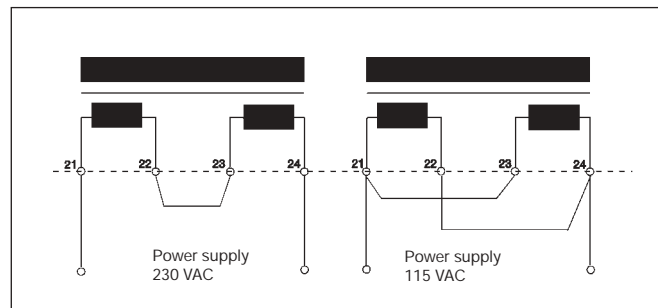
## General Specifications

<b>Power ON delay</b>	< 2.5 s until start of Dupline® carrier. < 40 s until correct reading of AnaLink values
<b>Indication for</b> Supply ON Dupline® carrier Fault Lonworks Service LED Lonworks Wink LED Module Status	LED, green LED, yellow LED, red LED, green LED, red LED, green
<b>Environment</b> Degree of protection Pollution degree Operating temperature Storage temperature	IP 20 3 (IEC 60664) 0° to +50°C (+32° to +122°F) -20° to +85°C (-4° to +185°F)
<b>Humidity (non-condensing)</b>	20 to 80% RH
<b>Mechanical resistance</b> Shock Vibration	15 G (11 ms) 2 G (6 to 55 Hz)
<b>Dimensions</b>	H8-housing
<b>Material</b>	(see Technical information)
<b>Weight</b>	540 g

## Supply Specifications

<b>Power supply</b>	Overvoltage cat. III (IEC 60664)
Rated operational voltage through term. 21, 22, 23 & 24	See wiring diagram
230	230 VAC ± 15% (IEC 60038)
115	115 VAC ± 15% (IEC 60038)
Frequency	45 to 65 Hz
Rated operational power	11 VA
Rated impulse withstand voltage	4 kV
230	2.5 kV
115	
Dielectric voltage	
Supply - Dupline®	≥ 4 kVAC (rms)
Supply - RS 485	≥ 4 kVAC (rms)

## Wiring Diagrams



## Mode of Operation

The G38910051 is a Dupline® to Lonworks gateway with built-in channelgenerator. The module, based on FTT-10A transmission media, makes Dupline® digital and analink inputs directly available as standard Lonmark network variables. Also, it is possible to control Dupline® digital and analink signals using network variables. In total, the module offers 242 input variables and 242 output variables. Several Dupline® gateways can be connected to the same Lonworks network.

### Dupline Configuration switches

The unit is equipped with the following Dupline® configuration switches. (See also switch settings)

1x16 position rotary-switch for selecting Number of Dupline® Channels in the range 8..128 (in steps of 8). The selected letter indicates the last channel group available on Dupline®. If e.g. H is selected, the 64 channels in groups A..H will be available.

DIP-switch (1) for selection of Dupline® Operation Mode. In "Normal" mode, Dupline® operates as a peer-to-peer

system where the channel generator automatically establishes a connection between Dupline® inputs and Dupline® outputs which are coded to the same Dupline® address. If e.g. an input coded for B5 is activated, the output(s) coded for B5 will also be activated. Consequently a Dupline® output can either be activated through the corresponding Lonworks network variable or by an active Dupline® input coded for the same Dupline® address. In "Split I/O" mode, the Dupline® inputs and Dupline® outputs are created independently by the channel generator. If e.g. an input coded for B5 is activated, the Gateway will propagate the event via the associated Lonmark network variable (like in normal mode), but it will not automatically activate the Dupline® output(s) coded to B5. In "Split I/O" mode, the Dupline® outputs are controlled exclusively through the Lonmark network variables.

DIP-switch (2), DIP-switch (3) and DIP-switch (4) are not used in this module.

The Service-pin, located on the front of the module on the right-hand side, can be used

during commissioning and maintenance. When activated, the G38910051 sends a Lonworks service message containing its 48-bit unique ID on the network. This information can be used by a network management tool (e.g. Lonmaker) to install and configure the node.

### Dupline® Input Data

A part of the Gateway input processor reads all the 128 Dupline®-channels as Digital inputs and another part reads the 112 channels (C1 to P8) as Analink inputs. Each Dupline® digital input has a Lonmark network variable of type SNVT\_switch assigned to it. It is also possible to read the status of the Dupline® digital input by using the variables nvo\_state\_64\_AH and nvo\_state\_64\_IP, which are of the type SNVT\_state\_64. Each of these variables contains the status of 64 Dupline® channels (A1-H8, I1-P8) and they are effective in use when a Lonworks device needs to read the status of several Dupline® channels.

There is also a Lonmark network variable assigned to each Dupline® analink input in

the range C1-P8. It has been chosen to make two commonly used variable types available, namely SNVT\_temp\_p (channels C1-I8) and SNVT\_lev\_percent (J1-P8). So temperature sensors need to be assigned an address in the range C1-I8, and analink devices with 0-20 mA, 4-20 mA or 0-10 VDC inputs must be assigned an address in the range J1-P8. Also, in order to achieve the correct scaling for an Analink temperature sensor, it is necessary to use the G89111010 or G86111010, which both operate in the range -30 to +60 C. See table "Lonwork network variables for further information".

### Dupline® Output Data

There are 128 network variables of type SNVT\_switch available for control of the digital status of each Dupline® channel. It is also possible to perform the control by using the network variables nvi\_state\_64\_AH (covering A1-H8) or nvi\_state\_64\_IP (covering I1-P8), which are of the type SNVT\_state\_64. These are effective in use if one Lonwork node need to control several Dupline® channels. If Normal mode is selected on DIP-switch (1), the outputs can also be controlled from Dupline®

## Mode of Operation (cont.)

transmitters coded for the same address as the output (OR-function).  
For control of Dupline® analog outputs, there are 112 network variables of type SNVT\_lev\_

percent available, one for each channel in the range C1-P8). If e.g. the value 50% is sent to such a variable, the output of a 4-20mA Dupline® module with this address will be 12 mA.

Important note:

The Neuron chip ID is printed on a label on the bottom side of the module.

## Lonworks network variables

### Digital input variables

Name	Type	Description
nvo_switch_A1	SNVT_switch	Input status A1
nvo_switch_A2	SNVT_switch	Input status A2
nvo_switch_A3	SNVT_switch	Input status A3
-----		
nvo_switch_A8	SNVT_switch	Input status A8
nvo_switch_B1	SNVT_switch	Input status B1
-----		
nvo_switch_P7	SNVT_switch	Input status P7
nvo_switch_P8	SNVT_switch	Input status P8
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nvo_state_64_AH	SNVT_state_64	Input status for all channel in groups A-H
nvo_state_64_IP	SNVT_state_64	Input status for all channel in groups I-P

### Digital output variables

Name	Type	Description
nvi_switch_A1	SNVT_switch	Output control A1
nvi_switch_A2	SNVT_switch	Output control A2
nvi_switch_A3	SNVT_switch	Output control A3
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nvi_switch_A8	SNVT_switch	Output control A8
nvi_switch_B1	SNVT_switch	Output control B1
-----		
nvi_switch_P7	SNVT_switch	Output control P7
nvi_switch_P8	SNVT_switch	Output control P8
-----		
nvi_state_64_AH	SNVT_state_64	Output control for all channel in groups A-H
nvi_state_64_IP	SNVT_state_64	Output control for all channel in groups I-P

### Analog input variables

Name	Type	Description
nvo_temp_p_C1	SNVT_temp_p	Analink Temperature C1
nvo_temp_p_C2	SNVT_temp_p	Analink Temperature C2
nvo_temp_p_C3	SNVT_temp_p	Analink Temperature C3
-----		
nvo_temp_p_C8	SNVT_temp_p	Analink Temperature C8
nvo_temp_p_D1	SNVT_temp_p	Analink Temperature D1
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nvo_temp_p_I7	SNVT_temp_p	Analink Temperature I7
nvo_temp_p_I8	SNVT_temp_p	Analink Temperature I8
nvo_lev_percent_J1	SNVT_lev_percent	Analink Input Value J1
nvo_lev_percent_J2	SNVT_lev_percent	Analink Input Value J2
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nvo_lev_percent_J8	SNVT_lev_percent	Analink Input Value J8
nvo_lev_percent_K1	SNVT_lev_percent	Analink Input Value K1
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nvo_lev_percent_P7	SNVT_lev_percent	Analink Input Value P7
nvo_lev_percent_P8	SNVT_lev_percent	Analink Input Value P8

### Analog output variables

Name	Type	Description
nvo_lev_percent_C1	SNVT_lev_percent	Analink Output Value C1
nvo_lev_percent_C2	SNVT_lev_percent	Analink Output Value C2
nvo_lev_percent_C3	SNVT_lev_percent	Analink Output Value C3
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nvo_lev_percent_C8	SNVT_lev_percent	Analink Output Value C8
nvo_lev_percent_D1	SNVT_lev_percent	Analink Output Value D1
-----		
nvo_lev_percent_I7	SNVT_lev_percent	Analink Output Value I7
nvo_lev_percent_I8	SNVT_lev_percent	Analink Output Value I8
nvo_lev_percent_J1	SNVT_lev_percent	Analink Output Value J1
nvo_lev_percent_J2	SNVT_lev_percent	Analink Output Value J2
-----		
nvo_lev_percent_J8	SNVT_lev_percent	Analink Output Value J8
nvo_lev_percent_K1	SNVT_lev_percent	Analink Output Value K1
-----		
nvo_lev_percent_P7	SNVT_lev_percent	Analink Output Value P7
nvo_lev_percent_P8	SNVT_lev_percent	Analink Output Value P8

The LON network variables are divided into 17 functionals blocks. There are no control functions built into the functional blocks. There are 16 blocks with all the variables belonging to a certain Dupline group: Group A, Group B, Group C,....., Group P

There is 1 block where all Dupline digital inputs and outputs can be accessed effectively through SNVT\_state\_64 variables: AllDigital

## Switch Settings

**1: Dupline Operation Mode**  
 OFF: Normal (Peer-to-Peer)  
 ON: Split I/O mode

**2: Not used**  
**3: Not used**  
**4: Not used**

**Number of Dupline Channels**  
 A: Group A 8 channels  
 B: Groups A. B 16 channels  
 P: Groups A..P 128 channels

## Lonworks LED Indicators (right hand side of the module)

	ON	OFF	Blinking
<b>LED 2</b>	The node is unconfigured and application less	The node is unconfigured and installed in a network	The node has an application but is not yet installed in a network (unconfigured).
<b>LED 3</b>		Normal state	A wink command is received on the Lonworks
<b>LED 4</b>	The module has been initiated correct and is working ok. (solid green LED)	A hardware error has occurred. (solid red LED)	Software error. Restart the module.

## Dimensions (mm)

