AC/DC 1000 MACHINE SCHEMATIC G5123 REV: C

ETHERNET BOARD

Ethernet

Not Used

J710 J79 J70 J711

J71

J74 — Status LED

J76

Jumper for DeviceNET

J75

DeviceNET — Arclink

LED 10 LED 11
LED 8 LED 7
LED 4 LED 3
LED 6 LED 5
LED 12

S1 S2

S4 S3

J77 J712 J72 J73

ETHERNET G3894-1

AC sync signals to control board

Diff I/O signals for syncronizing external machines Arclink

Provides the SYNC signals to control Frequency, Wave Balance, and Phase Relationship of a Power Wave AC/DC 1000 multi-arc system.

ETHERNET BD

Schematic: G3893
Located inside the enclosure

LED LED
LED LED
LED LED

LEDS (see other sheet for pattern & use) 12 LEDS TOTAL

DIP SWITCHES (see other sheet for use)

RS232 DIAGNOSTIC CONNECTOR Located on left side

2 — 253 — 1J70 — RS232 RECEIVE
3 — 254 — 2J70 — RS232 TRANSMIT
4
5
6
7 — 251 — 15J70 — RS232 COMMON
20

ETHERNET DIAGNOSTIC CONNECTOR Located on left side
RJ45 type

1 — 1J710 — TRANSMIT +
2 — 2J710 — TRANSMIT -
3 — 3J710 — RECEIVE +
4 — 4J710 — N/A
5 — 5J710 — N/A
6 — 6J710 — RECEIVE -
7 — 7J710 — N/A
8 — 8J710 — N/A

ETHERNET PORT

Ferrite Core

830 — 1J76 — DEVICENET CONFIGURATION MUST BE IN FOR DEVICENET

6W — 2J74 STATUS LED (HI FOR RED)
6B — 1J74 STATUS LED (HI FOR GREEN)

RED/GREEN STATUS LED

These signals feed this board, then pass through

ARCLINK L
ARCLINK H
+40VDC
COMMON

1J72 2J72 4J72 3J72
3J73 4J73 2J73 1J73

541E 542E 540E 500E 541E 542E 540E 500E

67

Ferrite Core (4 Places)

A B C D E — ARCLINK (OUT)
CAN LOW / CAN HIGH / V SENSE / 40VDC / COMMON

E D C B A — ARCLINK (IN)
COMMON / 40VDC / V SENSE / CAN HIGH / CAN LOW

891 892 893 894
5 4 3 2 1 — DEVICENET
CAN LOW / CAN HIGH / +24V GND / +24V

CAN_L CAN_H +24V GND +24VDC
4J75 1J75 2J75 5J75

ARC 2 "-" 1J712
ARC 1 "+" 2J712

POLARITY "-" 7J712
POLARITY "+" 8J712

KILL "-" 5J712
KILL "+" 6J712

READY "-" 3J712
READY "+" 4J712

12 — Differential Pair
13

14 — Differential Pair
15

16 — Differential Pair
17

18 — Differential Pair
19

ARC 1 (formerly PHASE 0)
ARC 2 (formerly PHASE 1)
ARC 3 (formerly PHASE 2)
ARC 4 (formerly PHASE 3)

LEAD COLOR CODE:
B-BLACK
G-GREEN
O-ORANGE
R-RED
U-BLUE
W-WHITE
Y-YELLOW

LABELS:
COMMON
FRAME GROUND
EARTH GROUND

COMPONENT VALUE UNITS:
CAPACITOR: MFD/VOLTS
RESISTOR: OHMS/WATTS

CONNECTOR PIN NUMBERS:
EX. 12 PIN CONNECTOR
1 2 — 6
7 — 12 LATCH
VIEW OF CONNECTOR ON PC BOARD

Schematic numbers are given for reference only.

Located on the top of enclosure
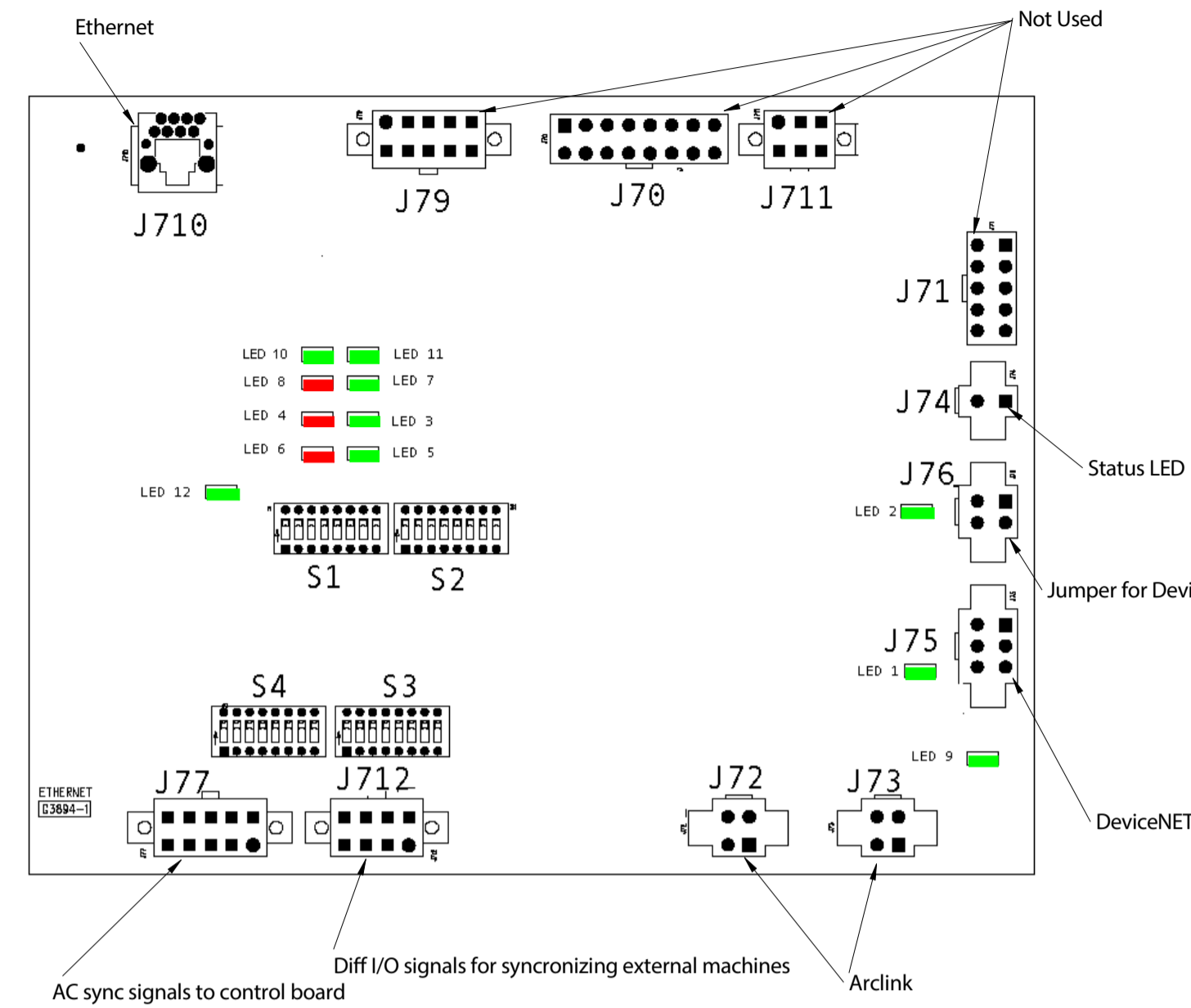
Description of LED functions on the Power Wave AC/DC
For reference only

G3894 Ethernet Gateway PC Board

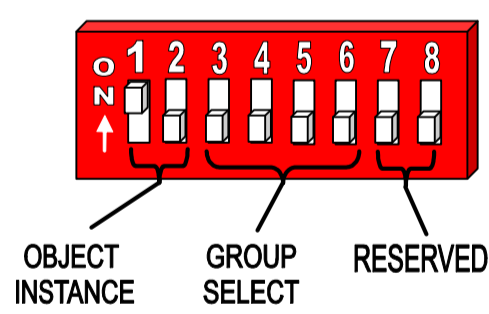| LED #	COLOR	FUNCTION
1	Green	Indicates Isolated Module Section Supply is ON
2	Green	Indicates DeviceNet Supply is ON
3	Green	ArcLink Status Indicators (Main System *Slave* ArcLink Connection) Solid Green only when functional (See software for error codes)
4	Red	
5	Green	Reserved For Future Use
6	Red	
7	Green	DeviceNet Status Indicators (See software group for coding)
8	Red	
9	Green	Indicates Isolated ArcLink Section Supply is ON
10	Green	10Base-T Link Status. ON indicates functional ethernet link has been established.
11	Green	Receiver Polarity. ON indicates proper ethernet signal polarity
12	Green	Indicates I/O+5V Supply is ON This is used by differential I/O pair 4 circuitry, J712 pins 1 and 2.

Troubleshooting the PowerWave System Interface

Using the Status LED

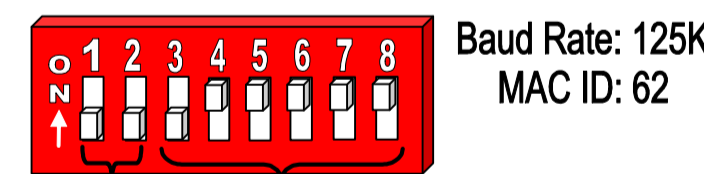| LIGHT CONDITION	MEANING
Steady Green	System OK. Unit is operational, and is communicating normally with the ArcLink network.
Blinking Green	Occurs during power up or a system reset, and indicates the Power Wave is mapping (identifying) each component in the system. Normal for first 1-10 seconds after power is turned on, or if the system configuration is changed during operation.
Fast Blinking Green	Indicates Auto-mapping has failed
Alternating Green and Red	Non-recoverable system fault. If the Status lights are flashing any combination of red and green, errors are present. **Read the error code(s) before the machine is turned off.** Error Code interpretation through the Status light is detailed in the Service Manual. Individual code digits are flashed in red with a long pause between digits. If more than one code is present, the codes will be separated by a green light. Only active error conditions will be accessible through the Status Light. Error codes can also be retrieved with the *Diagnostics Utility* (included on the *Power Wave Submerged Arc Utilities* and *Service Navigator CD's*). This is the preferred method, since it can access historical information contained in the error logs. To clear the active error(s), turn power source off, and back on to reset.
Steady Red	Not applicable.
Blinking Red	Not applicable.

Ethernet Board DIP Switches:

Bank S1 – ArcLink Set-up

Switch	Description	Comments
1	Object Instance LSB	
2	Object Instance MSB	
3	Equipment Group 1 Select	
4	Equipment Group 2 Select	Used for Arclink Configuration
5	Equipment Group 3 Select	
6	Equipment Group 4 Select	
7	Reserved for future use	
8	Reserved for future use	

Bank S2 – DeviceNet Set-up

Switch	Description	Comments
1	DeviceNet Baud Rate	
2		
3		
4		Used for DeviceNet configuration
5	DeviceNet Mac ID	(see Instruction Manual)
6		
7		
8		

"Bank S1" ArcLink Configuration
OBJECT INSTANCE GROUP SELECT RESERVED

"Bank S2" DeviceNet Configuration
Baud Rate: 125K
MAC ID: 62
BAUD RATE DEVICENET MAC ID

"Bank S4" Master / Slave Config
BOARD FUNCTION M HI GEN
TRANSMITTER
YES NO
KILL SYNC
POLARITY READY RESERVED

"Bank S3" I/O Termination
S Lo NG
YES NO
KILL SYNC
POLARITY READY
(Default Settings Shown)

PowerWave System Interface Error Codes (partial listing)

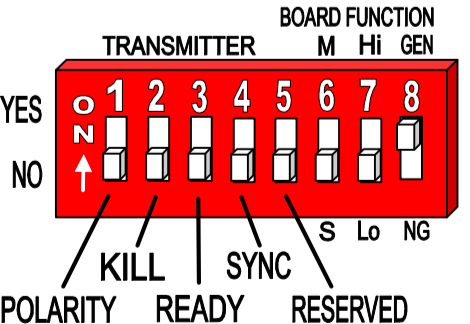| Error Code #	Indication
118 DeviceNet connection error	Lost Connection with DeviceNet Master
119 DeviceNet de-allocation error	The DeviceNet Master de-allocated the connection
133 Write ArcLink action failure	May be caused by activating Cold Inch while welding through DeviceNet
145 Duplicate MAC ID error	Check MAC ID assignments on DeviceNet Setup Dipswitch Bank (S2)
146 DeviceNet Bus off	Check condition of onboard DeviceNet Status indicators
147 DeviceNet polled I/O error	Problem changing attribute over polled I/O
149 DeviceNet I/O data error	Received DeviceNet I/O data with wrong number of bytes
169 Ethernet Connection Timeout	Loss of communication with PC Application.
171 Ethernet Socket Timeout	Note: These errors are only valid when the System Interface is connected directly to an Ethernet network (typically for diagnostic purposes). During normal operation it communicates via ArcLink or DeviceNet.
172 Ethernet Watch Dog Timeout	
Other	Error codes that contain four (4) digits are defined as fatal errors. These codes generally indicate internal errors on the Ethernet PC Board. If cycling the input power on the machine does not clear the error, try reloading the operating system. If this fails, replace the Ethernet PC Board.

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