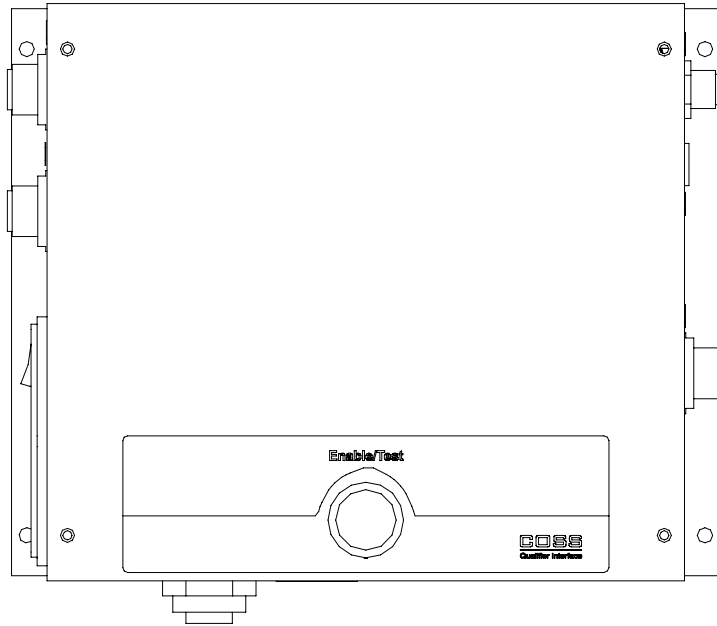


COSS/Qualifier Interface

INSTRUCTION MANUAL



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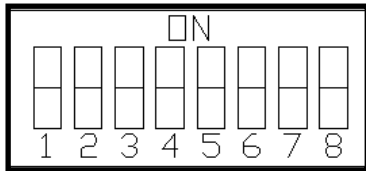
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Quick Start Guide



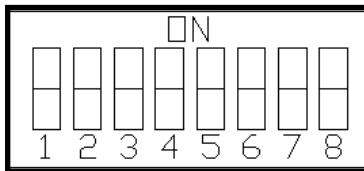
WARNING:

Be certain appropriate voltage is selected prior to applying power to the unit.



Step 1:

With the unit's power off, remove the lid. Set the baud rate by setting position 1 and 2 on the 8 position dip-switch (S1). For 125k baud, both dip-switches (1 and 2) should be in the off position.



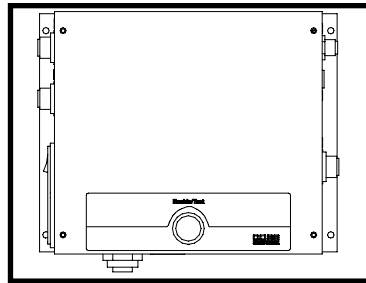
Step 2:

Set the node address using dip-switch (S1) positions 3 through 8. Addresses are created by turning on the appropriate dip-switches. Each dip-switch adds a given value to the address. Those values are as follows

POS 3 Adds 32 When ON
 POS 4 Adds 16 When ON
 POS 5 Adds 8 When ON
 POS 6 Adds 4 When ON
 POS 7 Adds 2 When ON
 POS 8 Adds 1 When ON

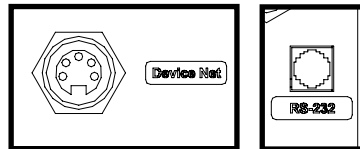
Step 3:

Make sure that both positions 1 & 2 on dip-switch S2 are in the off position (no termination).



Step 4:

Place the lid back onto the unit. Plug the unit in and power it up. The white power indication lamp on the front of the box should be "ON".



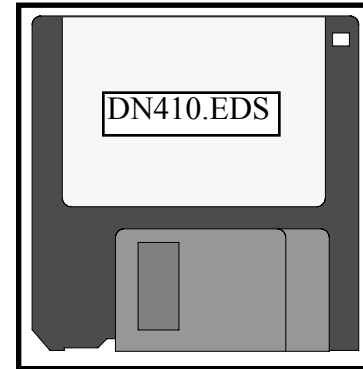
Step 5:

Use the RJ12 cable provided and plug the RS-232 port on the COSS/Qualifier interface box into the RS-232 port on the Qualifier.

Step 6:

Use the connector labeled DeviceNet and an appropriate cable (not supplied) and attach the unit to a network node.

Quick Start Guide (continued)



Step 7:

Make sure that the DN410.EDS file has been added to the DeviceNet system so that the COSS/Qualifier Interface will be recognized by the network.

Step 8:

Use the COSS MSTC 16 Spindle input and output images to collect and send bit information to the Qualifier.

The interface is expecting to receive and transmit four bytes.

Introduction:

Thank-you for your purchase of the COSS/Qualifier Interface! We are proud to be included as part of your assembly process.

This document is an operations guide for the COSS/Qualifier Interface. This interface unit is intended to work in conjunction with a Qualifier. As the Qualifier monitors a tool and a fastening process, the interface unit will continually poll the Qualifier collecting data. As events occur that should be reported to the COSS system, the interface will send that information via DeviceNet.

The COSS system can also manipulate data inside the interface that will effect the Qualifier and other peripherals that may be plugged into the unit.

Before using the COSS/Qualifier Interface, it is recommended that the user read this manual thoroughly. If this unit is mishandled a fatal accident, bodily injury, or damage to the device may occur.

This manual is intended to be a general guide to the operations of the COSS/Qualifier Interface. If any additional questions or concerns arise, please contact a CE Electronics representative.

Warnings:



There is a high electrical voltage inside the unit that could cause electric shock.



Do not allow any type of liquid to come into contact with any part of the unit.

Warnings (continued):



Immediately discontinue use of the unit if smoke, an abnormal odor, or an unusual sound is detected coming from the unit.



Do not fold, bend or apply excessive force to any cables or fitting.

Cautions:

Please use caution when handling this or any other electrical appliance.

The AC power entry can be set to accept 110VAC or 220VAC. Before powering up the unit for the first time, be certain that the voltage selection is appropriate for the power being supplied to the unit.

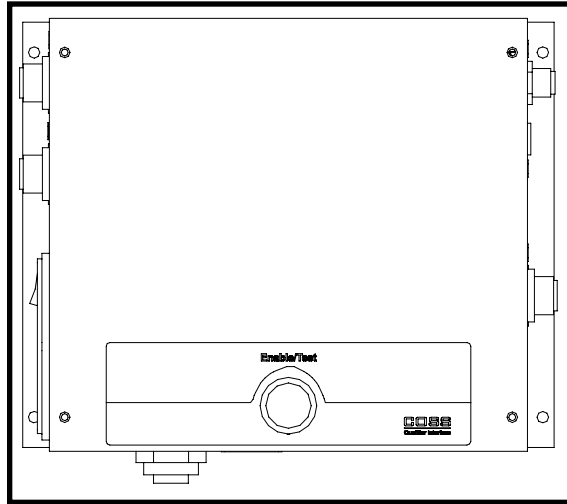
Avoid placing or storing this unit in a location where it may become wet or dust covered.

Do not place or mount this unit in an unstable area.

Dropping this unit may result in personal injury or damage to the unit.

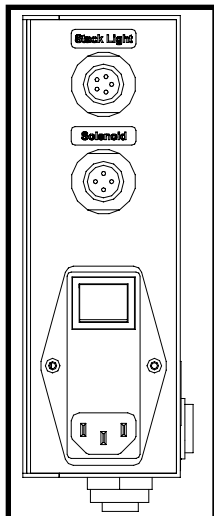
Before performing any maintenance on the unit, make sure to turn it off and remove the power plugs.

There are no user serviceable parts inside the main enclosure of the unit.

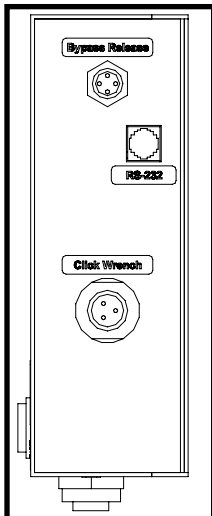


Unit Overview:

The COSS/Qualifier interface is intended to provide a means of attaching a Qualifier to the GM COSS network. There are five circular connectors on the outside of the unit, an RJ12 connector, and an illuminated push-button on the front of the unit.



LEFT SIDE

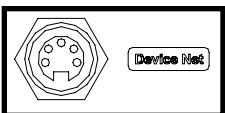


RIGHT SIDE

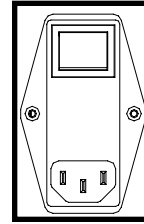
On the left side of the unit is a five-pin connector for running a stack light. Below the stack light connector is a four-pin connector that will control a solenoid, allowing a tool to be disabled. The power entry module is on the bottom of the left side.

On the right side of the unit, there is a four pin circular connector for attaching BYPASS and RELEASE switches. The RJ12 connector on right side of the unit is a serial port used for

providing communications between this unit and a Qualifier. A click-wrench can be interfaced to this unit through the three pin connector on the right side of the box.



The DeviceNet network connection is located on the bottom of the enclosure.



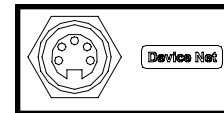
Power Entry Module:

The Power Entry Module is the AC power entry for the unit. The COSS/Qualifier Interface can be run at 110VAC or 220VAC.

A small “window” next to the power switch shows the voltage that the unit is set up to accept. Be sure this window is showing the appropriate voltage before applying power to the unit. If the wrong voltage is applied, damage may occur.

The center of the Power Entry Module can be removed in order to change this setting. Removing the center piece will also grant the user access to the fuses for the unit. The unit requires two fuses in order to operate. There are also two spare fuses inside this module.

DeviceNet Connector:



The five-pin connector on the bottom of the unit provides connectivity to DeviceNet.

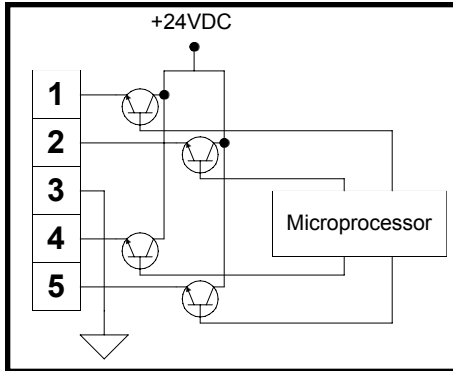
1	Shield
2	Voltage + (No Connection)
3	Voltage -
4	CAN H
5	CAN L

This male connector is wired per the DeviceNet standard. The unit draws no current from Pin 2 on the connector and therefore will not load down the network.

Light Stack Connector:



The stack light connector was designed to interface directly to existing GM style stack lights. There are signals available on this connector to operate Green, Yellow and Red lights as well as a Horn.



PIN 1 - GREEN LAMP
 PIN 2 - YELLOW LAMP
 PIN 3 - GROUND
 PIN 4 - RED LAMP
 PIN 5 - HORN

Pins 1, 2, 4 and 5 on this connector will supply +24VDC with reference to Pin 3. These pins can supply up to 500 milliamps of current each.

The stack light connector is a REMKE part number 205S0010P or equivalent.

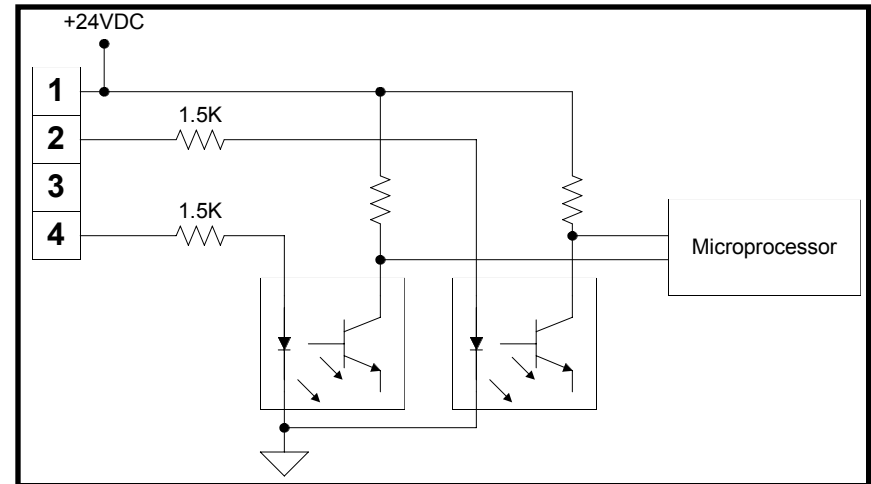
Bypass/Release Connector:



The Bypass/Release connector was designed to interface directly to GM bypass and release switches. These two inputs are optically isolated.

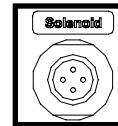
24VDC is available on pin one of this connector in order to wet the switches. The input for the Bypass switch is Pin 2. Pin 4 is the input for the release switch. Pin 3 is unused.

Bypass/Release Connector (continued):

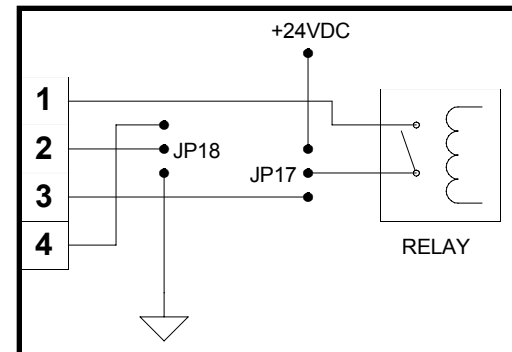


The connector used for the Bypass/Release switch interface is a REMKE part number 304S0015P or equivalent.

Solenoid Interface Connector:



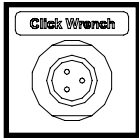
A normally closed relay is located inside the COSS/Qualifier Interface. This relay is meant to control a solenoid that can disable and enable a pneumatic tool under COSS control.



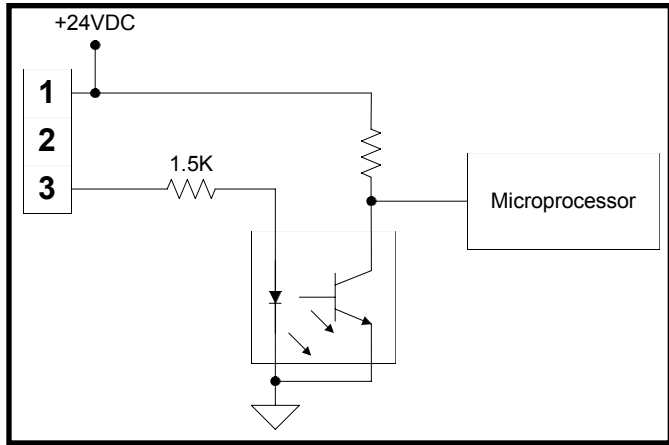
Jumpers are provided on the circuit board which will allow this port to either source 24VDC from the interface's supply or a voltage from an outside source.

This connector is a REMKE part number 204S0010P or equivalent.

Click Wrench Connector:



A three pin connector has been provided for interfacing a click wrench to the COSS/Qualifier Interface. This connector can be used if the pneumatic tool is damaged and the line worker has access to a click wrench.



+24VDC is provided on PIN1 of this connector in order to wet the switch on the click wrench.

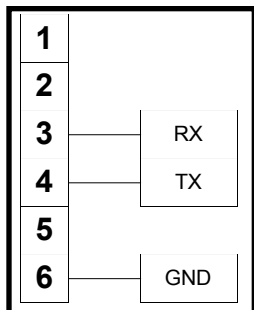
PIN3 is the input pin. This circuit is optically isolated.

This connector is a REMKE part number 203S0010P or equivalent.

RS-232 Serial Port (Qualifier Interface):



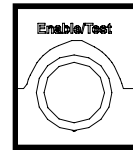
An RJ12 (6-pin telephone) connector has been provided in order to interface this unit to a



Qualifier. A “crossed” phone cable is used where pin 1 on the COSS interface is attached to pin 6 on the Qualifier’s RJ12 connector.

This connector allows serial (RS-232) communications with a Qualifier.

Power Light/Test Bit:



An illuminated push-button is located on the front of the unit. The lamp in this button will always be on during normal operation. If this lamp ever flashes, it means that the EEPROM memory inside the unit has been erased. Pressing the button while the lamp is flashing will re-write the default settings.

During normal operations, this push button may also be pressed to send a test bit to the COSS system.

This illuminated push button is an NKK part number LB15W01-28-BJ or equivalent

Output Data Bytes:

Four output bytes are available from this unit. Those output bytes align with the COSS MSTC output image. The bytes are transmitted as follows:

WORD1 BYTE1	WORD1 BYTE0	WORD0 BYTE1	WORD0 BYTE0
BIT7 SET TO '0'	BIT7 SET TO '0'	BIT7 SET TO '0'	BIT7 GBL ACC
BIT6 SET TO '0'	BIT6 SET TO '0'	BIT6 SET TO '0'	BIT6 PARAM
BIT5 SET TO '0'	BIT5 SET TO '0'	BIT5 SET TO '0'	BIT5 PARAM
BIT4 SET TO '0'	BIT4 SET TO '0'	BIT4 SET TO '0'	BIT4 PARAM
BIT3 SET TO '0'	BIT3 SET TO '0'	BIT3 CYCL CPL	BIT3 TST BTN
BIT2 SET TO '0'	BIT2 YLW TRQ	BIT2 SET TO '0'	BIT2 CLK WR
BIT1 SET TO '0'	BIT1 RED TRQ	BIT1 SET TO '0'	BIT1 RELEASE
BIT0 SET TO '0'	BIT0 GRN TRQ	BIT0 IN CYCL	BIT0 BYPASS

As out going bits change, they are held at a logic “1” for at least 500 milli-seconds and also at a logic “0” for the same amount of time.

Output Data Bytes (continued):

As the COSS/Qualifier interface will set the output bits based upon information received from the Qualifier and from other external stimulus.

Bits are set by the following events:

BYPASS - This bit is set when an input is received on pin 2 of the Bypass/Release connector

RELEASE - This bit is set when an input is received on pin 4 of the Bypass/Release connector.

CLK WR - This bit is set when an input occurs on the Click Wrench connector.

TST BTN - This bit is set when the button on the front of the box is pressed.

PARAM - The three parameter bits are a binary representation of the parameter that the Qualifier is set to. Parameter A is zero or 0 0 0. Parameter B would be represented as one or 0 0 1. Parameter H would be represented as a binary 7 or 1 1 1.

GBL ACC - A batch accept from the Qualifier will set this bit.

IN CYCL - This bit is set when the tool is running.

CYCL CPL - This bit is set for 500 milli-seconds after the tool ceases to operate.

Output Data Bytes (continued):

GRN TRQ - A cycle accept status within the Qualifier will set this bit.

RED TRQ - A reject status from the Qualifier sets this bit.

YLW TRQ - A reject status from the Qualifier sets this bit.

Input Data Bytes:

This unit expects to receive four bytes from DeviceNet. As that information is received, it is broken down and used as follows:

WORD1 BYTE1	WORD1 BYTE0	WORD0 BYTE1	WORD0 BYTE0
BIT7 UNUSED	BIT7 UNUSED	BIT7 UNUSED	BIT7 UNUSED
BIT6 UNUSED	BIT6 UNUSED	BIT6 UNUSED	BIT6 PARAM
BIT5 UNUSED	BIT5 UNUSED	BIT5 UNUSED	BIT5 PARAM
BIT4 UNUSED	BIT4 UNUSED	BIT4 UNUSED	BIT4 PARAM
BIT3 UNUSED	BIT3 UNUSED	BIT3 SPDL STP	BIT3 HORN
BIT2 UNUSED	BIT2 UNUSED	BIT2 ENABLE	BIT2 RED LITE
BIT1 UNUSED	BIT1 UNUSED	BIT1 UNUSED	BIT1 YLW LITE
BIT0 UNUSED	BIT0 UNUSED	BIT0 UNUSED	BIT0 GRN LITE

GRN LITE - Issues 24VDC (up to 500 mA) on pin 1 of the light stack connector.

YLW LITE - Issues 24VDC (up to 500 mA) on pin 2 of the light stack connector.

RED LITE - Issues 24VDC (up to 500 mA) on pin 4 of the light stack connector.

HORN - Issues 24VDC (up to 500 mA) on pin 5 of the light stack connector.

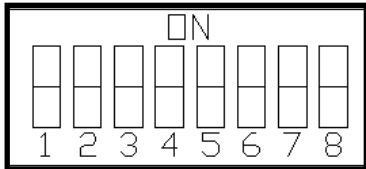
Input Data Bytes (continued):

PARAM - The three parameter bits determine the parameter that the Qualifier uses to monitor the fastening process. Eight different parameters can be selected through the use of these bits.

ENABLE - When the enable bit is set, the Cycle Accept LED on the transducer will flash until the tool is run.

SPDL STP - This is the spindle stop bit. The normally closed solenoid relay will open when this bit is set. See page 8 for more details.

Baud Rate:

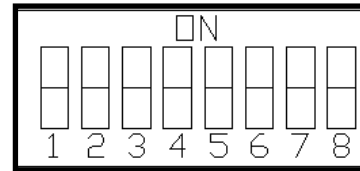


At the time this document was created, the COSS standard baud rate was 125Kbaud. In order to achieve that baud rate, both switches 1 & 2 on the eight position dip-switch should be in the off position.

It is possible to achieve other baud rates with this device. If another baud rate is desired, please refer to this table:

DIP1	DIP2	RATE
OFF	OFF	125K
OFF	ON	250K
ON	OFF	500K
ON	ON	Network Defined

Node Address Rate:



A node address can be set for this device by using switches 3 through 8 on the eight position dip-switch.

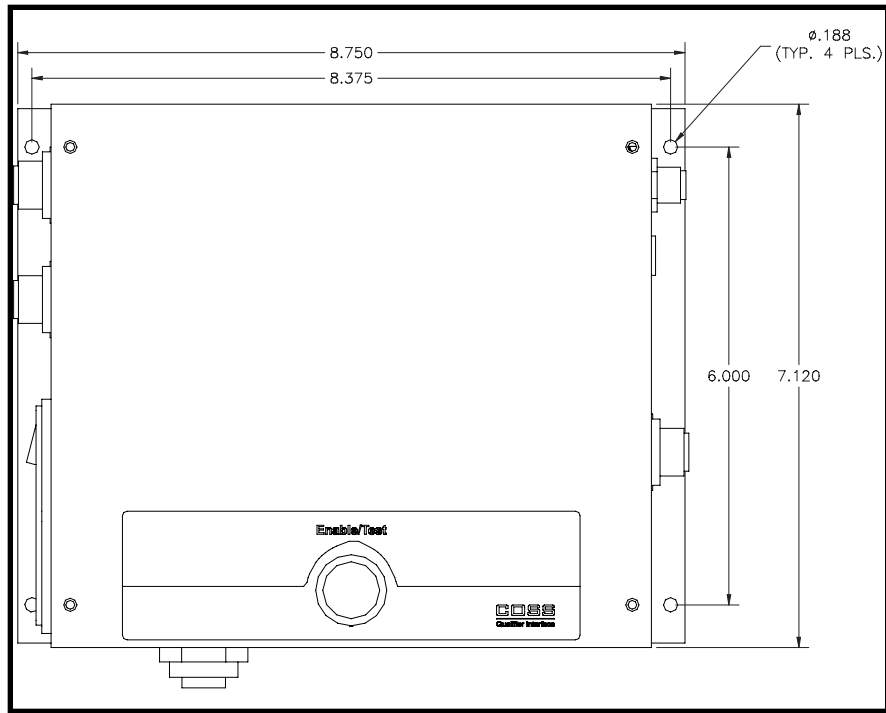
The address is created by adding the weighted values of the dip-switch. If a dip switch is on, that position's value is added to the address. The values for the positions are as follows:

Position	Weighted Value
DIP3	32
DIP4	16
DIP5	8
DIP6	4
DIP7	2
DIP8	1

Here's an example of creating an address for the node address 55:

Address 55					
DIP3	DIP4	DIP5	DIP6	DIP7	DIP8
ON	ON	OFF	ON	ON	ON
$32 + 16 + 4 + 2 + 1 = 55$					

Dimensions:



Appendix (Setting Addresses 0~31):

ADDRESS	DIP 3	DIP 4	DIP 5	DIP 6	DIP 7	DIP 8
0	OFF	OFF	OFF	OFF	OFF	OFF
1	OFF	OFF	OFF	OFF	OFF	ON
2	OFF	OFF	OFF	OFF	ON	OFF
3	OFF	OFF	OFF	OFF	ON	ON
4	OFF	OFF	OFF	ON	OFF	OFF
5	OFF	OFF	OFF	ON	OFF	ON
6	OFF	OFF	OFF	ON	ON	OFF
7	OFF	OFF	OFF	ON	ON	ON
8	OFF	OFF	ON	OFF	OFF	OFF
9	OFF	OFF	ON	OFF	OFF	ON
10	OFF	OFF	ON	OFF	ON	OFF
11	OFF	OFF	ON	OFF	ON	ON
12	OFF	OFF	ON	ON	OFF	OFF
13	OFF	OFF	ON	ON	OFF	ON
14	OFF	OFF	ON	ON	ON	OFF
15	OFF	OFF	ON	ON	ON	ON
16	OFF	ON	OFF	OFF	OFF	OFF
17	OFF	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON	OFF
19	OFF	ON	OFF	OFF	ON	ON
20	OFF	ON	OFF	ON	OFF	OFF
21	OFF	ON	OFF	ON	OFF	ON
22	OFF	ON	OFF	ON	ON	OFF
23	OFF	ON	OFF	ON	ON	ON
24	OFF	ON	ON	OFF	OFF	OFF
25	OFF	ON	ON	OFF	OFF	ON
26	OFF	ON	ON	OFF	ON	OFF
27	OFF	ON	ON	OFF	ON	ON
28	OFF	ON	ON	ON	OFF	OFF
29	OFF	ON	ON	ON	OFF	ON
30	OFF	ON	ON	ON	ON	OFF
31	OFF	ON	ON	ON	ON	ON

Appendix (Setting Addresses 32~63):

ADDRESS	DIP 3	DIP 4	DIP 5	DIP 6	DIP 7	DIP 8
32	ON	OFF	OFF	OFF	OFF	OFF
33	ON	OFF	OFF	OFF	OFF	ON
34	ON	OFF	OFF	OFF	ON	OFF
35	ON	OFF	OFF	OFF	ON	ON
36	ON	OFF	OFF	ON	OFF	OFF
37	ON	OFF	OFF	ON	OFF	ON
38	ON	OFF	OFF	ON	ON	OFF
39	ON	OFF	OFF	ON	ON	ON
40	ON	OFF	ON	OFF	OFF	OFF
41	ON	OFF	ON	OFF	OFF	ON
42	ON	OFF	ON	OFF	ON	OFF
43	ON	OFF	ON	OFF	ON	ON
44	ON	OFF	ON	ON	OFF	OFF
45	ON	OFF	ON	ON	OFF	ON
46	ON	OFF	ON	ON	ON	OFF
47	ON	OFF	ON	ON	ON	ON
48	ON	ON	OFF	OFF	OFF	OFF
49	ON	ON	OFF	OFF	OFF	ON
50	ON	ON	OFF	OFF	ON	OFF
51	ON	ON	OFF	OFF	ON	ON
52	ON	ON	OFF	ON	OFF	OFF
53	ON	ON	OFF	ON	OFF	ON
54	ON	ON	OFF	ON	ON	OFF
55	ON	ON	OFF	ON	ON	ON
56	ON	ON	ON	OFF	OFF	OFF
57	ON	ON	ON	OFF	OFF	ON
58	ON	ON	ON	OFF	ON	OFF
59	ON	ON	ON	OFF	ON	ON
60	ON	ON	ON	ON	OFF	OFF
61	ON	ON	ON	ON	OFF	ON
62	ON	ON	ON	ON	ON	OFF
63	ON	ON	ON	ON	ON	ON