USER'S MANUAL

DUAL FEEDBACK ISOLATOR with CURRENT LOOP OUTPUT

EU-10099G SERIES

DYNAPOWER INVENTORY NUMBER
EUG-7-100990006
EUG-7-100990007

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This EUG-7-100990006 has been designed to be a fit, form, and function replacement for :

EUG-7-100990002, (EU-10099G, Rev. B)

EUG-7-100990003, (EU-10099G, Rev. C)

EUG-7-100990004, (EU-10099G, Rev. D)

The Isolator functions are changed by moving two jumpers.

Circuit Replaced	EUG-7-100990006 Jumper Settings			
	JP1	JP2	JP3	JP4
EUG-7-100990002	N	Y	N	Y
EUG-7-100990003	Y	N	N	Y
EUG-7-100990004	Y	N	Y	N

For incorporation into new power supply designs, a Configuration will be used.

	EUG-7-100990006 Jumper Settings			
	JP1	JP2	JP3	JP4
Configuration B	N	Y	N	Y
Configuration C	Y	N	N	Y
Configuration D	Y	N	Y	N

* An EUG-7-100990006 cannot be configured to be an EUG-7-100990005.

Component changes on the EUG-7-100990006 are also required.

SUMMARY																
	EUG-7-100990002				EUG-7-100990003				EUG-7-100990004				EUG-7-100990005*			
	Configuration B				Configuration C				Configuration D				EUG-7-100990007*			
	Jumper Setting				Jumper Setting				Jumper Setting				Jumper Setting			
	JP1	JP2	JP3	JP4	JP1	JP2	JP3	JP4	JP1	JP2	JP3	JP4	JP1	JP2	JP3	JP4
	N	Y	N	Y	Y	N	Y	N	Y	N	N	Y	N	Y	N	Y
Terminal	INPUTS															
13(+) - 12	0 – 50 mv				0 – 50 mv				0 – 50 mv				0 – 2.5 V			
16(+) - 15	0 – 2.5 V				0 – 2.5 V				0 – 2.5 V				0 – 2.5 V			
Terminal	OUTPUTS															
6 Current Feedback	0 - (-)50mv, Absolute				0 - (±)50mv, Bi-Polar				0- (-)50mv, Absolute				0 - (-)50mv, Absolute			
7 Voltage Feedback	0 - (-)10v, Absolute				0 - (±)10v, Bi-Polar				0- (±)10v, Bi-Polar				0 - (-)10v, Absolute			
8 Voltage Feedback	0-20 ma, Absolute 4-20 ma, Absolute				0-20 ma, Unipolar 4-20 ma, Uniploar				0-20 ma, Unipolar 4-20 ma, Uniploar				0-20 ma, Absolute 4-20 ma, Absolute			
10 Current Feedback	0-20 ma, Absolute 4-20 ma, Absolute				0-20 ma, Unipolar 4-20 ma, Unipolar				0-20 ma, Absolute 4-20 ma, Absolute				0-20 ma, Absolute 4-20 ma, Absolute			
17 Voltage Feedback	0 – (±)10v, Bi-Polar Filtered				0 – (±)10v, Bi-Polar Filtered				0 –(±)10v, Bi-Polar Filtered				0 – (±)10v, Bi-Polar Filtered			
19 Current Feedback	0 – (±)10v, Bi-Polar Filtered				0 – (±)10v, Bi-Polar Filtered				0 –(±)10v, Bi-Polar Filtered				0 – (±)10v, Bi-Polar Filtered			
					STANDARD CONFIGURATION				**FOR REVERSING OR BATTERY CHG/DISCHG SUPPLIES**							

* An EUG-7-100990006 cannot be configured to be an EUG-7-100990007.

Component changes on the EUG-7-100990006 are also required.

CONTENTS

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1. SPECIFICATIONS

EUG-7-100990006 (EU-10099G, Rev. F) Configuration B

REV. B	JP1	JP2	JP2	JP4
	ON	ON	ON	ON

Input Power ..... 115 Vac, 50/60 Hz, 6VA

Isolation: Input to Output..... ± 1000 Vpk, 750 Vrms

Input to Input ..... ± 2000 Vpk, 1500 Vrms.

Current Channel: Input Resistance ..... 100 ohms

Input Signal ..... 0-50 avg dcmv

0-200 dcmv peak

Voltage Channel: Input Resistance .....10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Current Channel Output ..... 0 to -50 mv dc abs.

adjustable 0 to ±10 vdc

0-20ma or 4-20ma, 10V compliance

Voltage Channel Output ..... adjustable 0 to -10 Vdc abs.

adjustable 0 to ±10 Vdc

0-20ma or 4-20ma, 10V compliance

Linearity, both Channels ..... < ± .05%

Temperature Stability ..... ± .02% /°C.

Bandwidth - Both Channels ..... 2.5 Khz

Bipolar Outputs ..... 20 Hz

EUG-7-100990006 (EU-10099G, Rev. F) Configuration C

REV. C	JP1	JP2	JP2	JP4
	ON	ON	ON	ON

Input Power ..... 115 Vac, 50/60 Hz, 6VA

Isolation: Input to Output..... ± 1000 Vpk, 750 Vrms

Input to Input ..... ± 2000 Vpk, 1500 Vrms.

Current Channel: Input Resistance ..... 100 ohms

Input Signal ..... 0-50 avg dcmv

0-200 dcmv peak

Voltage Channel: Input Resistance .....10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Current Channel Output ..... 0 to -50 mv dc

adjustable 0 to ±10 vdc

0-20ma or 4-20ma, 10V compliance

Voltage Channel Output ..... adjustable 0 to -10 Vdc

adjustable 0 to ±10 Vdc

0-20ma or 4-20ma, 10V compliance

Linearity, both Channels ..... < ± .05%

Temperature Stability ..... ± .02% /°C.

Bandwidth - Both Channels ..... 2.5 Khz

Bipolar Outputs ..... 20 Hz

EUG-7-100990006 (EU-10099G, Rev. F) Cofiguration D

REV. D	JP1	JP2	JP2	JP4
	ON	ON	ON	ON

Input Power ..... 115 Vac, 50/60 Hz, 6VA

Isolation: Input to Output..... ± 1000 Vpk, 750 Vrms

Input to Input ..... ± 2000 Vpk, 1500 Vrms.

Current Channel: Input Resistance ..... 100 ohms

Input Signal ..... 0-50 avg dcmv

0-200 dcmv peak

Voltage Channel: Input Resistance .....10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Current Channel Output ..... 0 to -50 mv dc abs.

adjustable 0 to ±10 vdc

0-20ma or 4-20ma, 10V compliance

Voltage Channel Output ..... adjustable 0 to -10 Vdc .

adjustable 0 to ±10 Vdc

0-20ma or 4-20ma, 10V compliance

Linearity, both Channels ..... < ± .05%

Temperature Stability ..... ± .02% /°C.

Bandwidth - Both Channels ..... 2.5 Khz

Bipolar Outputs 20 Hz

EUG-7-100990006 (EU-10099G, Rev. F) set for Rev. E ***

REV. E	JP1	JP2	JP2	JP4
	ON	ON	ON	ON

***** Additional component changes on the EUG-7-100990006 are required**

Dual 2.5 Volt Input

Input Power ..... 115 Vac, 50/60 Hz, 6VA

Isolation: Input to Output..... ± 1000 Vpk, 750 Vrms

Input to Input ..... ± 2000 Vpk, 1500 Vrms.

Current Channel: Input Resistance ..... 10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Voltage Channel: Input Resistance .....10 Kohms

Input Signal ..... 0 to 2.5 avg Vdc

0 to 5 Vdc peak

Current Channel Output ..... 0 to -50 mv dc abs.

adjustable 0 to ±10 vdc

0-20ma or 4-20ma, 10V compliance

Voltage Channel Output ..... adjustable 0 to -10 Vdc .

adjustable 0 to ±10 Vdc

0-20ma or 4-20ma, 10V compliance

Linearity, both Channels ..... < ± .05%

Temperature Stability ..... ± .02% /°C.

Bandwidth - Both Channels ..... 2.5 Khz

Bipolar Outputs 20 Hz

DYNAPOWER CORPORATION

DUAL FEEDBACK ISOLATOR with CURRENT LOOP OUTPUT

2. DESCRIPTION

Most regulator circuits used in Dynapower power supplies require current feedback signal from a 50 mv shunt and a higher level voltage feedback signal from the output bus.
Also interfaced to the regulator circuits may be signals from external equipment. The regulators and external equipment are thus connected directly to one of the power supply output busses.

It is advantageous to isolate the power supply output bus from the electronic regulating and monitoring circuits. To this end, the Dual Feedback Isolator Circuit may be used. The circuit has large bandwidth, excellent linearity and stability, making it suitable for closed loop applications.

The circuit has two inputs which are isolated from each other. One channel is used as the current feedback channel and the other is used as the voltage feedback channel.

The following descriptions do not apply to an EUG-7-100990007, see the description starting at Page 16 of this Manual.

2.1 CURRENT FEEDBACK CHANNEL

The current feedback channel has been designed for an input of 0-50 mv dc. There are three outputs from the current channel:

an absolute value 0 to -50 mv dc to connect to a regulator (see User's Manual)

a bipolar 0 to 10 with adjustable gain

a current loop output, 4-20 ma or 0-20 ma selected with SW2

The Current Loop output can only be uni-polar. If the jumpers for the Current channel are set for bi-polar output, then the current loop output will only work when the input polarity is positive.

The current loop output may be converted into a positive voltage by switching in a resistor. Outputs are selected by setting dip switches as shown in the following table.

CURRENT CHANNEL DIP SWITCH SETTINGS

OUTPUT	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6
0 - 20 MA	ON	ON	OFF	OFF	OFF	OFF
4 - 20 MA	OFF	OFF	ON	OFF	OFF	OFF
0 - 2 VOLTS	ON	ON	OFF	ON	OFF	OFF
0 - 5 VOLTS	ON	ON	OFF	OFF	ON	OFF
0 - 10 VOLTS	ON	ON	OFF	OFF	OFF	ON
.4 - 2 VOLTS	OFF	OFF	ON	ON	OFF	OFF
1 - 5 VOLTS	OFF	OFF	ON	OFF	ON	OFF
2 - 10 VOLTS	OFF	OFF	ON	OFF	OFF	ON

2.2 VOLTAGE FEEDBACK CHANNEL

The voltage channel has been designed for an input of 0-2.5 Vdc. A voltage dropping resistor must be connected in series with one of the input terminals. The input resistance of the voltage is 10 Kohms.

There are three outputs from the voltage channel:

an absolute value 0 to -10 volts dc with adjustable gain

a bipolar 0 to 10 volts with adjustable gain

a current loop output, 4-20 ma or 0-20 ma selected with SW1

The Current Loop output can only be uni-polar. If the jumpers for the Current channel are set for bi-polar output, then the current loop output will only work when the input polarity is positive.

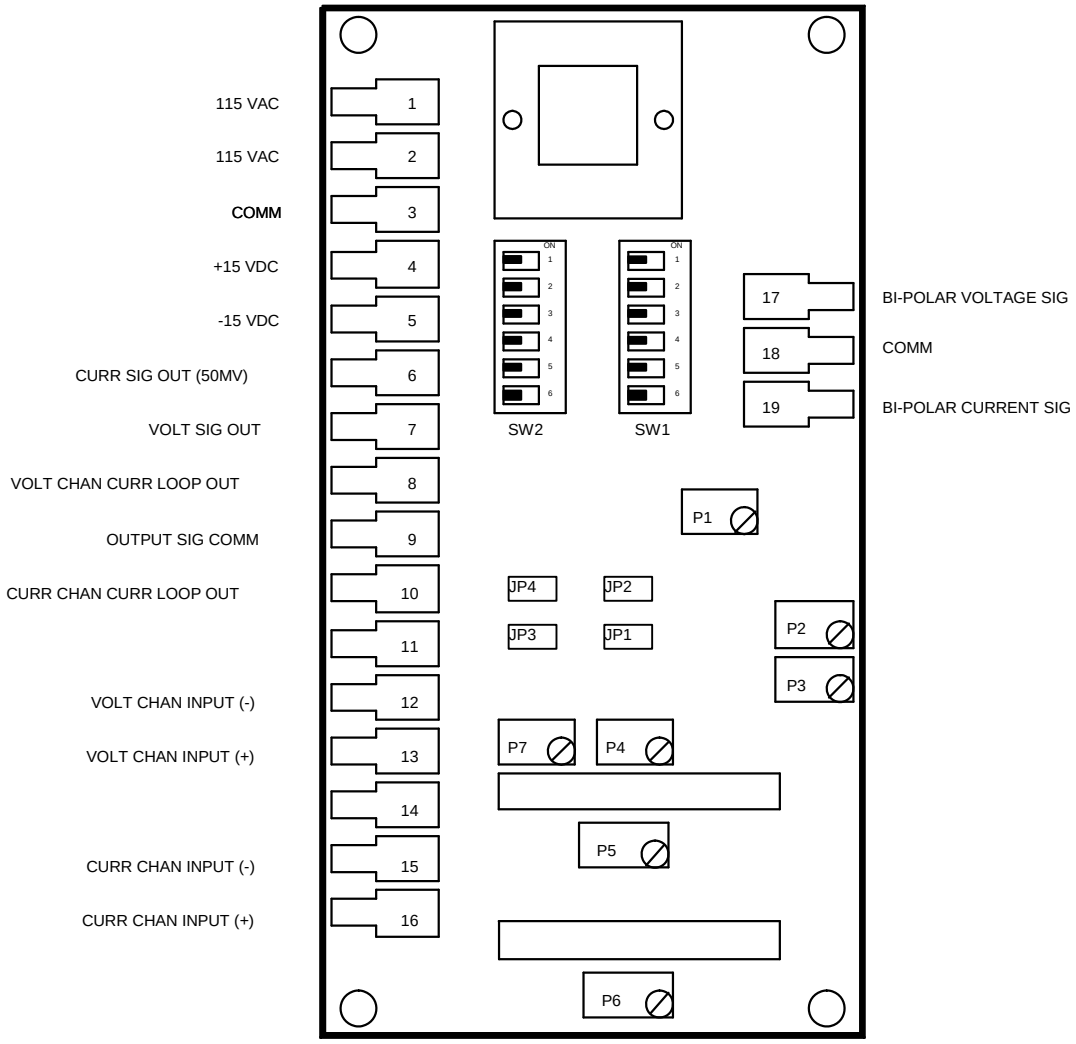
The current loop output may be converted into a positive voltage by switching in a resistor. Outputs are selected by dip switch settings as shown in the following table.

VOLTAGE CHANNEL DIP SWITCH SETTINGS

OUTPUT	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6
0 - 20 MA	ON	ON	OFF	OFF	OFF	OFF
4 - 20 MA	OFF	OFF	ON	OFF	OFF	OFF
0 - 2 VOLTS	ON	ON	OFF	ON	OFF	OFF
0 - 5 VOLTS	ON	ON	OFF	OFF	ON	OFF
0 - 10 VOLTS	ON	ON	OFF	OFF	OFF	ON
.4 - 2 VOLTS	OFF	OFF	ON	ON	OFF	OFF
1 - 5 VOLTS	OFF	OFF	ON	OFF	ON	OFF
2 - 10 VOLTS	OFF	OFF	ON	OFF	OFF	OFF

3. TERMINAL FUNCTIONS

Terminal	Function	
1	115 Vac power	
2	115 Vac power	
3	Power Supply Common	
4	+ 15 Volt Power Supply Output	
5	- 15 Volt Power Supply Output	
6	50 MV Current Signal (absolute negative or bi-polar)	Jumper Setting
7	Voltage Signal (absolute negative or bi-polar)	Jumper Setting
8	Voltage Channel Current Loop Out	
9	Output Signal Common	
10	Current Channel Current Loop Out	
11	N/C	
12	Voltage Channel Input (-)	
13	Voltage Channel Input (+)	
14	N/C	
15	Current Channel Input (-)	
16	Current Channel Input (+)	
17	Voltage Channel Bi-polar Out	
18	Output Signal Common	
19	Current Channel Bi-polar Out	


115 VAC
115 VAC
COMM
+15 VDC
-15 VDC
CURR SIG OUT (50MV)
VOLT SIG OUT
VOLT CHAN CURR LOOP OUT
OUTPUT SIG COMM
CURR CHAN CURR LOOP OUT
VOLT CHAN INPUT (-)
VOLT CHAN INPUT (+)
CURR CHAN INPUT (-)
CURR CHAN INPUT (+)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
ON
SW2
SW1
17
18
19
BI-POLAR VOLTAGE SIG
COMM
BI-POLAR CURRENT SIG
P1
JP4
JP2
JP3
JP1
P2
P3
P7
P4
P5
P6

4. ADJUSTMENTS

P1 adjusts current channel bi-polar output on terminal 19.

P2 adjusts voltage channel bi-polar output on terminal 17.

P3 adjusts voltage channel output on terminal 7.

P4 adjusts voltage channel current loop output on terminal 8.

P5 adjusts voltage channel offset.

P6 adjusts current channel offset.

P7 adjusts current channel current loop output on terminal 10.

5. BENCH TEST

1. Set voltage channel for 4 to 20 ma output.

   Set current channel for 4 to 20 ma output.

   JP1 – OFF

   JP2 – ON

   JP3 – OFF

   JP4 - ON

2. Measure voltage between terminal 4 and common terminal 3

   Should be +15, ± .25 Vdc

3. Measure voltage on terminal 5 and common terminal 3

   Should be -15, ± .25 Vdc

4. Voltage Channel

   Connect milli-ammeter in series with 100 ohms to terminal 8 and terminal 9

   Current from terminal 8 should be 4.00 ma, adjust with P5.

   Voltage on terminal 7 should be ± .01

   Voltage on terminal 17 should be ± .01

   Connect 2.50 Vdc to terminal 13 (+) and terminal 12.

   Current from terminal 8, should be 20.00 ma, adjust with P4.

   Voltage on terminal 7 should be -5.00, adjust with P3.

   Voltage on terminal 17 should be +5.00, adjust with P2

   Remove milli-ammeter

5. Current Channel

Connect milli-ammeter in series with 100 ohms terminal 10 and terminal 9

Current from terminal 10 should be 4.00 ma, adjust with P6.

Voltage on terminal 19 should be ± .01 volts.

Voltage on terminal 6 should be ± .005 volts.

Connect 50.00 mv dc to terminal 16 (+) and 15.

Voltage on terminal 6 should be -50.0 mv

Current from terminal 10 should be 20.0 ma, adjust with P7.

Voltage on terminal 19 should be +5.00, adjust with P1.

6. FIELD ADJUSTMENTS

The Isolator can be used to close the loop of the regulator controlling the power supply and at the same time provide feedback to the User. Making adjustments to one function may affect the other function, i.e. making adjustments for closed loop may affect feedback to the User and making adjustments to User feedback may affect power supply setpoint.

If adjustments are to be made while the supply is running

Adjustment to the voltage feedback should be made with the power supply running in constant current mode

Adjustments to the current feedback should be made with the power supply running in constant voltage mode.

For voltage measurements, terminal 3 is common.

Voltage Channel

Power supply is OFF.

Connect milli-ammeter in series with terminal 8 and terminal 9

Current from terminal 8 should be 4.00 ma or 0.00 ma (depending on SW1switch settings), adjust with P5.

Voltage on terminal 7 should be ± .01

Voltage on terminal 17 should be ± .01

Turn supply ON, set output for constant current operation.

If feedback current is set for 0 - 20 ma, feedback current should be 20*(actual power supply voltage)/(power supply voltage rating), adjust with P4.

If feedback current is set for 4 - 20 ma, feedback current should be 4 + 16*(actual power supply voltage)/power supply voltage rating, adjust with P4.

Voltage on terminal 7 should be -5.00*(actual power supply voltage)/(power supply voltage rating), adjust with P3. If the voltage from this terminal is used as the feedback voltage to a regulator, then the power supply VOLT LIMIT control will have to be reset.

Voltage on terminal 17 should be +5.00*(actual power supply voltage)/(power supply voltage rating), adjust with P2.

5. Current Channel

Power supply is OFF.

Connect milli-ammeter in series with terminal 9 and terminal 10

Current from terminal 10 should be 4.00 ma or 0.00 ma (depending on SW2 switch settings), adjust with P6.

Voltage on terminal 6 should be ± .001

Voltage on terminal 19 should be ± .01

Turn supply ON, set output for constant voltage operation

If feedback current is set for 0 - 20 ma, feedback current should be 20*(actual power supply current)/(power supply current rating), adjust with P7.

If feedback current is set for 4 - 20 ma, feedback current should be 4 + 16*(actual power supply current)/(power supply current rating), adjust with P7.

Voltage on terminal 6 should be -.050*(actual power supply current)/(power supply current rating).

Voltage on terminal 19 should be +5.00*(actual power supply current)/(power supply current rating), adjust with P1.

Note

The output voltages on terminal 17 and 19 are intended to be feedbacks to User equipment and may be set to match the requirements of User equipment.

EUG-7-100990007

The standard circuit, EUG-7-100990006, has been modified to accept two high level inputs. The maximum input to each channel is 2.5 volts, an external resistor must be used for scaling. The input resistance of each channel is 10 kohms.

2.1 CURRENT FEEDBACK CHANNEL

The current feedback channel has been designed for an input of 0-2.5 vdc. There are three outputs from the current channel:

an absolute value 0 to -50 mv dc (see User's Manual)

a bipolar 0 to 10 with adjustable gain

a current loop output, 4-20 ma or 0-20 ma selected with SW2

The Current Loop output can only be uni-polar. If the jumpers for the Current channel are set for bi-polar output, then the current loop output will only work when the input polarity is positive. The current loop output may be converted into a positive voltage by switching in a resistor. Outputs are selected by setting dip switches as shown in the following table.

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OUTPUT	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6
0 - 20 MA	ON	ON	OFF	OFF	OFF	OFF
4 - 20 MA	OFF	OFF	ON	OFF	OFF	OFF
0 - 2 VOLTS	ON	ON	OFF	ON	OFF	OFF
0 - 5 VOLTS	ON	ON	OFF	OFF	ON	OFF
0 - 10 VOLTS	ON	ON	OFF	OFF	OFF	ON
.4 - 2 VOLTS	OFF	OFF	ON	ON	OFF	OFF
1 - 5 VOLTS	OFF	OFF	ON	OFF	ON	OFF
2 - 10 VOLTS	OFF	OFF	ON	OFF	OFF	ON

2.2 VOLTAGE FEEDBACK CHANNEL

The voltage channel has been designed for an input of 0-2.5 Vdc. A voltage dropping resistor must be connected in series with one of the input terminals. The input resistance of the voltage is 10 Kohms.

There are three outputs from the voltage channel:

an absolute value 0 to -10 volts dc with adjustable gain

a bipolar 0 to 10 volts with adjustable gain

a current loop output, 4-20 ma or 0-20 ma selected with SW1

The Current Loop output can only be uni-polar. If the jumpers for the Current channel are set for bi-polar output, then the current loop output will only work when the input polarity is positive.

The current loop output may be converted into a positive voltage by switching in a resistor. Outputs are selected by dip switch settings as shown in the following table.

VOLTAGE CHANNEL DIP SWITCH SETTINGS

OUTPUT	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6
0 - 20 MA	ON	ON	OFF	OFF	OFF	OFF
4 - 20 MA	OFF	OFF	ON	OFF	OFF	OFF
0 - 2 VOLTS	ON	ON	OFF	ON	OFF	OFF
0 - 5 VOLTS	ON	ON	OFF	OFF	ON	OFF
0 - 10 VOLTS	ON	ON	OFF	OFF	OFF	ON
.4 - 2 VOLTS	OFF	OFF	ON	ON	OFF	OFF
1 - 5 VOLTS	OFF	OFF	ON	OFF	ON	OFF
2 - 10 VOLTS	OFF	OFF	ON	OFF	OFF	OFF