MIC-3645

6U Ultra3 Wide SCSI Interface card for
CompactPCI ™

CompactPCI™ **Modular Industrial Computer**

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CE Notification

The MIC-3645, developed by Advantech CO., LTD., has passed the CE test for environment specification when shielded cable are used for external wiring. We recommend the use of shielded cables.

Product warranty

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for one year from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.

2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.

4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Packing List

Before installing your board, ensure that the following materials have been received:

- One MIC-3645 CompactPCI SCSI card

- One MIC-3646 rear transition board

- One utility CD-ROM disc and user's manual(PDF file)

- One warranty certificate

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Technical Support and Sales Assistance

If you have any technical questions about the MIC-3645 or any other Advantech products, please visit our support website at:

- **http://www.advantech.com.tw/support**

For more information about Advantech's products and sales information, please visit:

- **http://www.advantech.com**

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General Information

1.1   Introduction

The MIC-3645 is a 6U-size high-speed SCSI module for CompactPCI™ systems. It complies with PICMG 2.0 R 3.0 CompactPCI™ Specification.

The MIC-3645 uses the Symbios® SYM53C1010-33, PCI to Dual Channel Ultra3 SCSI Multifunction Controller, to provide an Ultra3 wide SCSI interface. The SYM53C1010 supports a 64-bit or 32-bit, 33 MHz PCI bus and performs 16-bit, Ultra3 SCSI synchronous data transfers as fast as 160 Mbytes/s on each SCSI channel providing a total bandwidth of 320 Mbytes/s.

The MIC-3645 can support cables up to 12 meters long, and up to 16 LVD or SE devices on a wide SCSI bus. On the front panel of the MIC-3645, there are three LED indicators to monitor the operations of the two Ultra3 SCSI channel as well as the power status. The rear transition board, MIC-3646, provides two external connectors and two internal connectors for easy system configuration. Users can choose the more convenient connection to set up their system.

The MIC-3645 supports a variety of operating systems, including DOS, Windows NT/2000/98/95/ME, Solaris and SCO UNIX.

1.2   Features

- Dual SCSI channels
- 64-bit or 32-bit, 33 MHz PCI bus interface
- High data transfer rates up to 160 MB/s
- Supports for operations for 16 separate SCSI devices
- Provides two external and two internal connectors on the rear I/O transition board for easy system configuration
- LED indicators for easy monitoring

1.3   Specifications

- **Controller:** Symbios® SYM53C1010-33
- Supports 16-bit Low Voltage Differential (LVD) signaling
- Performs Ultra3 SCSI LVD synchronous transfers as fast as 160 MB/s

Rear Transition Board (MIC-3646)

- Two internal and two external SCSI connectors

Mechanical and Environmental Specifications

- **Board size:**
  MIC-3645: 233.35 x 160 mm (9.2" x 6.3"), 1-slot (4TE) width
  MIC-3646: 233.35 x 80 mm (9.2" x 3.15"), 1-slot (4TE) width
- **Weight:**
  MIC-3645: 0.4 kg
  MIC-3646: 0.3 kg
- **Power consumption:** +3.3 V @ 2.0 A (max.)
- **Operating temperature:** 0 ~ 60º C (32 ~ 158º F)
- **Storage temperature:** -20º ~ 80º C (-4 ~ 176º F)
- **Humidity (operating and storage):** 5 ~ 95% (non-condensing)
- **Shock:** 10 G (operating); 30 G (storage/transit)
- **Random vibration:** 1.5 Grms

1.4 Indicator and Connector Locations

Table 1-1: MIC-3645 connector and indicator descriptions

J1, J2	Primary CompactPCI™ bus
J3, J5	Rear I/O transition
D2	Power status indicator
D4	Ultra3 SCSI channel A indicator
D5	Ultra3 SCSI channel B indicator
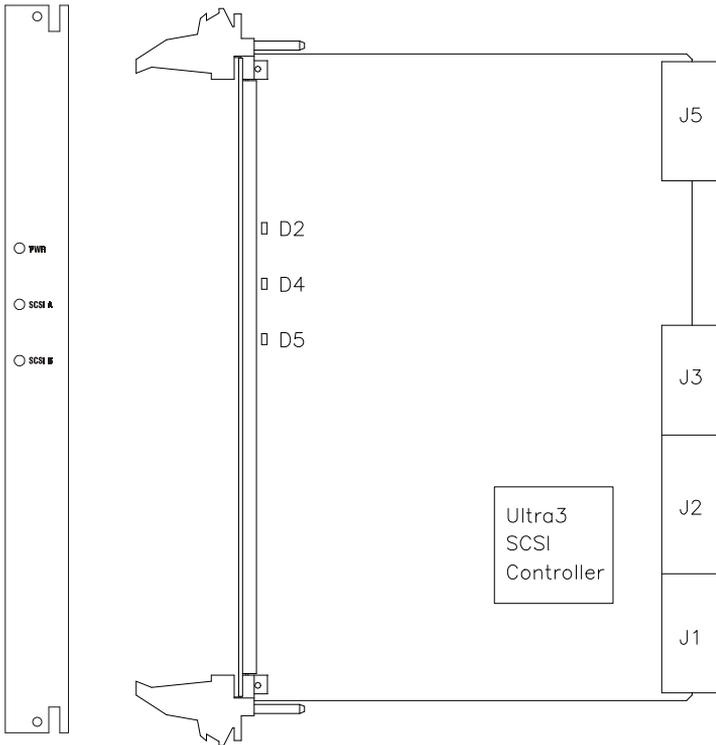
Figure 1-1: MIC-3645 indicator and connector locations

Table 1-2: MIC-3646 connector descriptions

J1, J2	Rear I/O transition
J4, J6	Ultra3 SCSI connectors for channel A
J3, J5	Ultra3 SCSI connectors for channel B
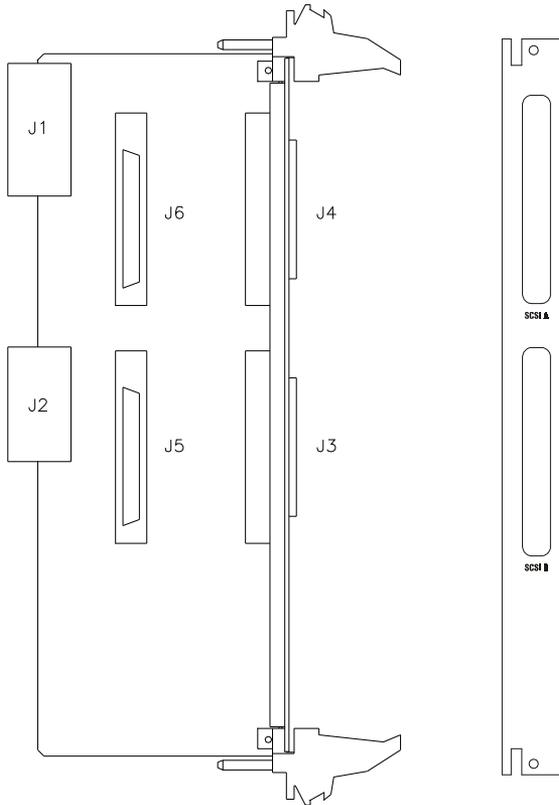
Figure 1-2: MIC-3646 connector locations

1.5 Safety Precautions

Follow these simple precautions to protect yourself from harm and the products from damage.

1. To avoid electric shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.

2. Always ground yourself to remove any static charge before you touch your SCSI card. Be particularly careful not to touch the chip connectors. Keep the card in its antistatic packaging when it is not installed in the PC, and place it on a static dissipative mat when you are working with it. Wear grounding wrist strap for continuous protection.

Hardware and Drivers Installation

2.1 Initial Inspection

We carefully inspected the MIC-3645 and MIC-3646 mechanically and electronically before shipping. It should be free of marks and scratches and in perfect working order on receipt.

As users unpack the MIC-3645 and MIC-3646 , check it for signs of shipping damage (damaged box, scratches, dents, etc.). If it is damaged or fails to meet specifications, notify Advantech's service department or the local sales representative immediately. Also notify the carrier that was used to ship the product to user's location from Advantech's factory or distributor. Retain the shipping carton and packing material for inspection by the carrier. Advantech will make arrangements to repair or replace the unit after an inspection.

Warning: *Discharge your body's static electric charge by touching the back of the grounded chassis of the system unit (metal) before handling the board. You should avoid contact with materials that hold a static charge such as plastic, vinyl and styrofoam. Touch the board only by its edges to avoid static damage to its integrated circuits. Avoid touching the exposed circuit connectors.*

2.2   Card Installation

The CompactPCI connectors are firm and rigid and require careful handling while plugging and unplugging. Improper installation of a card can easily damage the backplane of the chassis.

The insert/eject handle of the MIC-3645/MIC-3646 helps you to install and remove the card easily and safely. Follow the procedure below to install the MIC-3645/MIC-3646 into a chassis:

To install a card:
1. Hold the card vertically. Be sure that the card is pointing in the correct direction. For the MIC-3645, the components of the card should be pointing to the right-hand side. For the MIC-3646, keep the components point to the left-hand side when facing the rear side of the chassis.

2. Pull out both handles to unlock it.

Caution: *Keep your fingers away from the hinge to prevent your fingers from getting pinched.*

3. Insert the card into the chassis by sliding the upper and lower edges of the card into the card guide.

4. Push the card into the slot gently by sliding the card along the card guide until the handles meet the rectangular holes of the cross rails.

Note: *If the card is correctly positioned and has been slid all the way into the chassis, the handle should match the rectangular holes. If not, remove the card from the card guide and repeat step 3 again. Do not try to install a card by forcing it into the chassis.*

5. Pull the upper handle down and life the lower handle up to push the card into place.

6. Secure the card by pushing in the red portion to lock it into place.

To remove a card:
1. Unscrew the two screws on the front panel.

2. Life the upper handle up and Press the lower handle down to release the card from the backplane.

3. Slide the card out.
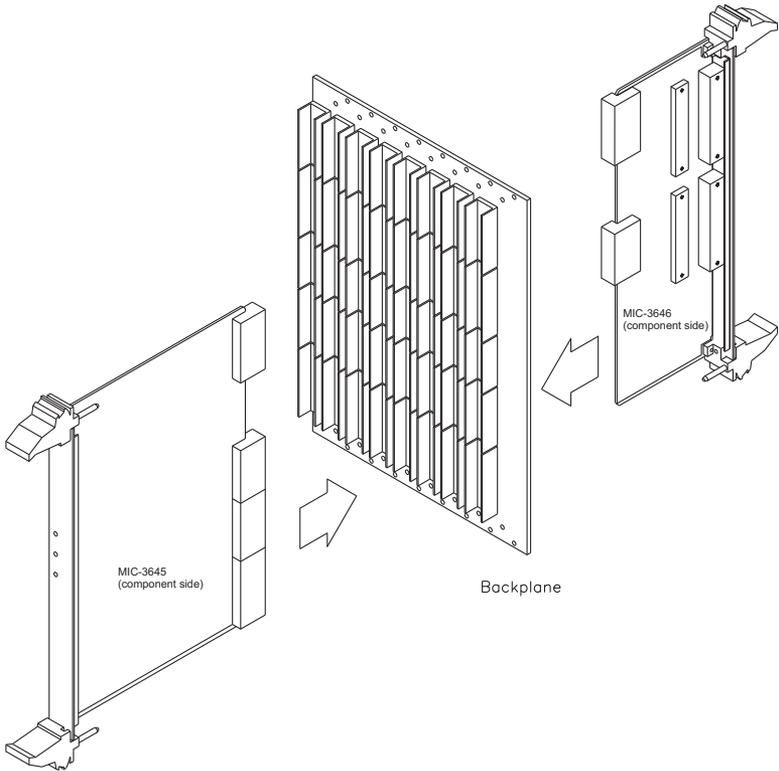
Figure 2-1: Intallation for MIC-3645 & MIC-3646

2.3 Driver Installation

The MIC-3645 uses the Symbios SYM531010-33 SCSI processor to provide the Ultra 3 SCSI interfaces on the rear transition board MIC-3646 via the J1 and J2 connector. The Ultra 3 SCSI interfaces have a data transfer rate up to 160 MB/s. The device can support cables up to 12-meter long and up to 16 LVD devices on a wide LVD (Low Voltage Differential) SCSI bus. Device drivers and utilities for DOS, Windows 2000/95/98/NT, and, SCO UNIX, and Solaris are included in the utility CD-ROM disc.

2.3.1 Utility and Drivers

The utility user's guide and installation instructions are provided in the utility CD-ROM disc. The instructions are located in the directory \MIC3645\SCSI and include:

For DOS:

- **\MIC3645\SCSI\DOS\DOS.TXT:** Installation instructions for DOS

- **\MIC3645\SCSI\DOS\INSTALL.EXE:** Drivers for DOS

For Windows 95/98/ME:

- **\MIC3645\SCSI\WIN9X\WIN9X.TXT:** Installation instructions for Windows 95/98/ME

- **\MIC3645\SCSI\WIN9X\SYMC8XX.INF:** Drivers for Windows 95/98/ME

For Windows NT:

- **\MIC3645\SCSI\WINNT\WINNT.TXT:** Installation instructions for Windows NT 4.0

- **MIC3645\SCSI\WINNT\WINNT\MINIPORT\OEMSETUP.INF:** Drivers for Windows NT 4.0

For Windows 2000:

- **\MIC3645\SCSI\WIN2000\WIN2000.TXT:** Installation instructions for Windows 2000.

- **\MIC3645\SCSI\WIN2000\WINNT\MINIPORT\OEMSETUP.INF:** Drivers for Windows 2000.

For SCO UNIX:

\MIC3645\SCSI\SCOUNIX\SCOUNIX.TXT: Installation instructions for SCO UNIX

\MIC3645\SCSI\SCOUNIX\RAWRITE3.COM: Driver for SCO UNIX

For Solaris 7 (x86-based):

\MIC3645\SCSI\SOLARIS7\SOLARIS.TXT: Installation instructions for Solaris 7

\MIC3645\SCSI\SOLARIS7\RAWRITE3.COM: Drivers for Solaris 7

Note: *The installation procedures below assume users' CD-ROM drive name is D.*

Pin Assignments

A.1 MIC-3645 J1 connector pin assignments

Table A-1: J1 connector pin assignments

Pin	Row A	Row B	Row C	Row D	Row E
25	+5 V	REQ64#	N/C	N/C	+5 V
24	AD1	+5 V	N/C	AD0	ACK64#
23	N/C	AD4	AD3	+5 V	AD2
22	AD7	GND	N/C	AD6	AD5
21	N/C	AD9	AD8	M66EN	C/BE0#
20	AD12	GND	N/C	AD11	AD10
19	N/C	AD15	AD14	GND	AD13
18	SERR#	GND	N/C	PAR	C/BE1#
17	N/C	N/C	N/C	GND	PERR#
16	DEVSEL#	GND	N/C	STOP#	N/C
15	N/C	FRAME#	IRDY#	GND	TRDY#
14					
13	KEY	AREA			
12					
11	AD18	AD17	AD16	GND	C/BE2#
10	AD21	GND	N/C	AD20	AD19
9	C/BE3#	IDSEL	AD23	GND	AD22
8	AD26	GND	N/C	AD25	AD24
7	AD30	AD29	AD28	GND	AD27
6	REQ#	GND	N/C	CLK	AD31
5	N/C	N/C	RST#	GND	GNT#
4	N/C	GND	N/C	N/C	N/C
3	INTA#	N/C	N/C	+5 V	N/C
2	N/C	+5 V	N/C	N/C	N/C
1	+5 V	N/C	TRST#	+12 V	+5 V

# indicates "low active".

A.2 MIC-3645 J2 connector pin assignments

Table A-2: J2 connector pin assignments

Pin	Row A	Row B	Row C	Row D	Row E
22	N/C	N/C	N/C	N/C	N/C
21	N/C	GND	N/C	N/C	N/C
20	N/C	N/C	N/C	GND	N/C
19	N/C	GND	N/C	N/C	N/C
18	N/C	N/C	N/C	GND	N/C
17	N/C	GND	N/C	N/C	N/C
16	N/C	N/C	N/C	GND	N/C
15	N/C	GND	N/C	N/C	N/C
14	AD35	AD34	AD33	GND	AD32
13	AD38	GND	N/C	AD37	AD36
12	AD42	AD41	AD40	GND	AD39
11	AD45	GND	N/C	AD44	AD43
10	AD39	AD48	AD47	GND	AD46
9	AD52	GND	N/C	AD51	AD50
8	AD56	AD55	AD54	GND	AD53
7	AD59	GND	N/C	AD58	AD57
6	AD63	AD62	AD61	GND	AD60
5	C/BE5#	GND	N/C	C/BE4#	PAR64#
4	N/C	N/C	C/BE7#	GND	C/BE6#
3	N/C	GND	N/C	N/C	N/C
2	N/C	N/C	N/C	N/C	N/C
1	N/C	GND	N/C	N/C	N/C

# indicates "low active".

A.3 MIC-3645 J3/MIC-3646 J2 connector pin assignments

Table A-3: J3 connector pin assignments

Pin	Row A	Row B	Row C	Row D	Row E	Row F
19	B-TPWE	B-TPWE	B-TPWE	B-TPWE	NC	GND
18	NC	NC	NC	NC	NC	GND
17	NC	NC	NC	NC	NC	GND
16	NC	NC	NC	NC	NC	GND
15	NC	BSEN-EX	NC	NC	NC	GND
14	NC	BSEN-IN	NC	NC	NC	GND
13	NC	NC	NC	NC	+BSDP1	GND
12	+BSD12	NC	+BSD14	-BSD14	-BSDP1	GND
11	-BSD12	+BSD13	-BSD13	+BSD15	-BSD15	GND
10	DIFFSEN-	NC	NC	+BSD0	-BSD0	GND
9	-BSD5	+BSD5	+BSD2	-BSD1	+BSD1	GND
8	+BSD6	-BSD6	-BSD2	+BSD3	-BSD3	GND
7	NC	NC	NC	-BSD4	+BSD4	GND
6	+BSACK	+BSDP0	-BSDP0	-BSD7	+BSD7	GND
5	-BSACK	+BSBSY	-BSBSY	+BSATN	-BSATN	GND
4	+BSD10	+BSRST	-BSRST	+BSMSG	-BSMSG	GND
3	-BSD10	-BSCD	+BSCD	+BSSEL	-BSSEL	GND
2	-BSD11	+BSD9	-BSD8	-BSREQ	+BSREQ	GND
1	+BSD11	-BSD9	+BSD8	-BSIO	+BSIO	GND

A.4 MIC-3645 J5/MIC-3645 J1 connector pin assignments

Table A-4: J5 connector pin assignments

Pin	Row A	Row B	Row C	Row D	Row E	Row F
1	-ASD11	+ASD11	-ASD10	+ASD10	GND	GND
2	-ASD9	+ASD9	-ASD8	+ASD8	GND	GND
3	-ASIO	+ASIO	-ASREQ	+ASREQ	GND	GND
4	-ASCD	+ASCD	-ASSEL	+ASSEL	GND	GND
5	-ASRST	+ASRST	-ASMSG	+ASMSG	GND	GND
6	-ASBSY	+ASBSY	-ASACK	+ASACK	DIFFSEN-A	GND
7	-ASATN	+ASATN	-ASDP0	+ASDP0	GND	GND
8	-ASD7	+ASD7	-ASD5	+ASD5	GND	GND
9	-ASD6	+ASD6	-ASD4	+ASD4	GND	GND
10	-ASD2	+ASD2	-ASD3	+ASD3	GND	GND
11	-ASD1	+ASD1	-ASD0	+ASD0	GND	GND
12	+ASD15	-ASD15	-ASDP1	+ASDP1	GND	GND
13	-ASD13	+ASD13	-ASD14	+ASD14	GND	GND
14	-ASD12	+ASD12	N/C	N/C	GND	GND
15	N/C	N/C	N/C	N/C	N/C	GND
16	A-TPWE	A-TPWE	N/C	N/C	ASEN-EX	N/C
17	A-TPWE	A-TPWE	ASEN-IN	N/C	N/C	GND
18	N/C	N/C	N/C	N/C	N/C	GND
19	N/C	N/C	N/C	N/C	N/C	N/C
20	N/C	N/C	N/C	N/C	N/C	N/C
21	N/C	N/C	N/C	N/C	N/C	N/C
22	N/C	N/C	N/C	N/C	N/C	N/C

A.5 MIC-3646 Ultra3 SCSI Connectors (J4 and J6)
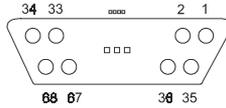
Table A-5: MIC-3646 Ultra3 SCSI connectors

Pin	Signal	Pin	Signal
1	+ASD12	35	-ASD12
2	+ASD13	36	-ASD13
3	+ASD14	37	-ASD14
4	+ASD15	38	-ASD15
5	+ASDP1	39	-ASDP1
6	+ASD0	40	-ASD0
7	+ASD1	41	-ASD1
8	+ASD2	42	-ASD2
9	+ASD3	43	-ASD3
10	+ASD4	44	-ASD4
11	+ASD5	45	-ASD5
12	+ASD6	46	-ASD6
13	+ASD7	47	-ASD7
14	+ASDP0	48	-ASDP0
15	GND	49	GND
16	DIFFSEN-A	50	ASEN-IN FOR J6 ASEN-EX FOR J4
17	A-TPWE	51	A-TPWE
18	A-TPWE	52	A-TPWE
19	N/C	53	N/C
20	GND	54	GND
21	+ASATN	55	-ASATN

22	GND	56	GND
23	+ASBSY	57	-ASBSY
24	+ASACK	58	-ASACK
25	+ASRST	59	-ASRST
26	+ASMSG	60	-ASMSG
27	+ASSEL	61	-ASSEL
28	+ASCD	62	-ASCD
29	+ASREQ	63	-ASREQ
30	+ASIO	64	-ASIO
31	+ASD8	65	-ASD8
32	+ASD9	66	-ASD9
33	+ASD10	67	-ASD10
34	+ASD11	68	-ASD11

A.6 MIC-3646 Ultra3 SCSI Connectors (J3 and J5)

Table A-6: MIC-3646 Ultra3 SCSI connectors

Pin	Signal	Pin	Signal
1	+BSD12	35	-BSD12
2	+BSD13	36	-BSD13
3	+BSD14	37	-BSD14
4	+BSD15	38	-BSD15
5	+BSDP1	39	-BSDP1
6	+BSD0	40	-BSD0
7	+BSD1	41	-BSD1
8	+BSD2	42	-BSD2
9	+BSD3	43	-BSD3
10	+BSD4	44	-BSD4

11	+BSD5	45	-BSD5
12	+BSD6	46	-BSD6
13	+BSD7	47	-BSD7
14	+BSDP0	48	-BSDP0
15	GND	49	GND
16	DIFFSEN-B	50	BSEN-IN FOR J6 BSEN-EX FOR J4
17	B-TPWE	51	B-TPWE
18	B-TPWE	52	B-TPWE
19	N/C	53	N/C
20	GND	54	GND
21	+BSATN	55	-BSATN
22	GND	56	GND
23	+BSBSY	57	-BSBSY
24	+BSACK	58	-BSACK
25	+BSRST	59	-BSRST
26	+BSMSG	60	-BSMSG
27	+BSSEL	61	-BSSEL
28	+BSCD	62	-BSCD
29	+BSREQ	63	-BSREQ
30	+BSIO	64	-BSIO
31	+BSD8	65	-BSD8
32	+BSD9	66	-BSD9
33	+BSD10	67	-BSD10
34	+BSD11	68	-BSD11