

**ST MICRO CONNECT DATASHEET****MSS-RDI (CUSTOMER DOCUMENTATION)****DOCUMENT HISTORY**

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### Overview

ST Micro Connect is a comprehensive host interface allowing connection between an Ethernet, Parallel Port or USB based host to an ST development board with debug support. ST Micro Connect can interface with a range of ST device families including the 32-bit ST20, ST40 and ST200. For details of which interfaces are supported by each toolset, refer to the related toolset documentation.

ST Micro Connect is an intelligent host target interface which provides fast access to host services, access to on-chip emulation and debug facilities and is software configurable. The ST Micro Connect is simple to install and easy to use.

### Features

- High performance host-target connection for cross-development
- Supports Solaris, Linux and Windows hosts
- Supports 32-bit ST20 and ST40 micros

- Download speeds up to 700 Kbyte/s over Ethernet (50 times faster than serial port)
- Simple to install
- Easy to use
- Fast access to host services (for example, printf)
- Access to on-chip emulation capabilities
- Field-upgradeable firmware
- Compact desktop design

### Supports

- ST20, ST40 and ST200 variants with on-chip emulation support
- Ethernet: Solaris, Linux and Windows 95, 98, NT, 2000, XP
- Parallel port: Windows 95, 98, NT, 2000, XP
- USB: Windows 98, 2000, XP

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# 1 Introduction

ST Micro Connect is an intelligent host-target interface that allows any of the following to interface with any ST development board with debug support:

- an Ethernet based Sun, Linux PC or Windows PC,
- a Windows PC with a parallel port,
- a Windows PC with a Universal Serial Bus (USB) connection.

The ST Micro Connect can plug into any standard:

- RJ45 UTP Ethernet port,
- PC 25-way D-type parallel port,
- USB connector.

When connected to the Ethernet, ST Micro Connect is a network device which provides a fast, flexible interface between the host system and a target development system. The advantage of using ST Micro Connect in this mode is that it allows the target system to be remote and to be easily shared among users. ST Micro Connect understands TCP/IP protocol, which is the protocol used by the Internet. This datasheet includes instructions of how to configure and test ST Micro Connect. It assumes that the user is reasonably familiar with the concepts and terms involved with TCP/IP networking.

Supported parallel port modes are ECP mode, Nibble mode and Byte mode depending on which mode the host PC can support.

In USB mode, the ST Micro Connect has full plug-and-play, auto-configure capability. USB mode is supported for Windows 98, 2000 and XP.

Connection to the development target is via a 26-way IDC connector. Once connected, the development target can be accessed using a wide spectrum of ST Microelectronics' products as well as many third party products. This flexibility is achieved by allowing code to be downloaded to ST Micro Connect by the toolset being used.

ST Micro Connect also has a monitor program built in which allows it to be configured and queried as to what code is currently running and various other status information. This can be accessed either via the serial port or via a telnet session, see [Chapter 9: Monitor interface on page 24](#).

## 1.1 CE compliant

The ST Micro Connect is CE compliant and carries the following warning.

### **Warning**

This is a Class A product. When connected to the Ethernet, it is a requirement that the EMC-ferrite, provided with the product, is clipped onto the Ethernet cable.

In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.



## 2 Installation for Windows hosts

For Windows hosts, ST Micro Connect is supplied with an installation program on CD-ROM. Once ST Micro Connect is connected and powered on, insert the CD-ROM in the appropriate drive and execute `setup.exe`. This is the simplest method of installing the ST Micro Connect.

For an Ethernet connection there are additional steps to perform, for example, set up the IP address and, for Windows 95, install the Winsock software. [Chapter 3: Installation for Ethernet on page 6](#) provides full details for installing for Ethernet.

For further information about connecting to the Parallel port, see [Chapter 4: Installation on the parallel port on page 10](#).

For further information about connecting to the USB port, see [Chapter 5: Installation on the USB on page 11](#).

## 3 Installation for Ethernet

Ethernet connection is supported on Solaris, Linux and Windows 95, 98, NT, 2000 and XP platforms.

The following steps must be performed to install ST Micro Connect for use on Ethernet hosts.

- 1 For Windows 95 hosts only, ensure the PC has Winsock 2 installed.
- 2 Configure the ST Micro Connect with the network parameters for example, IP address.
- 3 Connect the ST Micro Connect to the Ethernet and plug in the target development system.
- 4 Test the connection.

Once the ST Micro Connect is correctly installed, verify the operation with the toolset, as described in the relevant toolset documentation. The following sections describe the above steps in detail.

### 3.1 Installing Winsock 2

If ST Micro Connect is being used from a PC with Windows 95, then Winsock 2 for Windows 95 must be installed on the PC. The Winsock 2 update can be installed and executed by running `setup.exe`, see [Chapter 2: Installation for Windows hosts on page 5](#). Transfer the file to a suitable directory and execute it.

Winsock 2 is provided as standard with later versions of Windows.

### 3.2 Configuration for Ethernet

ST Micro Connect must be configured via a terminal emulator before it can be connected and used on the network.

Ethernet configuration is accomplished by carrying out the following steps. [Section 3.2.1](#) to [Section 3.2.4](#) describe the steps in further detail.

- 1 Set a serial terminal or terminal emulator to the protocol required by ST Micro Connect.
- 2 Connect the serial terminal to the ST Micro Connect.
- 3 Connect the ST Micro Connect to the power supply and switch the power on at the ST Micro Connect front panel.

The **ON** LED illuminates as soon as the power is switched on and the LEDs on the ST Micro Connect front panel cycle for a few seconds to indicate that the ST Micro Connect software is running. For a description of the meaning of the LEDs, see [Chapter 7: LEDs on page 16](#).

- 4 Use the ST Micro Connect command interface to enter the appropriate configuration data.

The configuration data required depends on the current network configuration. If you are unsure, you should consult your System Administrator. [Table 1](#) lists the configuration data which may be supplied.

Configurable data	Required	Comment
ST Micro Connect internet protocol (IP) address.	Mandatory	Uniquely identifies the ST Micro Connect on the network.
Subnet mask.	Mandatory for subnetworks.	As appropriate for the target network.
IP address of a gateway machine.	Optional	
Name for the ST Micro Connect on the target network.	Optional	

**Table 1: ST Micro Connect configuration data**

*Note: ST Micro Connect does not support DHCP for obtaining IP addresses automatically. This information must be programmed into the ST Micro Connect directly. If necessary, contact your System Administrator to obtain this information.*

Once the ST Micro Connect is configured and tested it is ready to be connected to the network and used. The terminal emulator can be left connected, see [Chapter 9: Monitor interface on page 24](#).

### 3.2.1 Initializing the serial port

The serial port must be set to:

- 9600 Baud,
- 8 Data bits,
- No parity,
- 1 stop bit,
- No hardware flow control.

### 3.2.2 Setting up a terminal emulator

See [Appendix A on page 27](#) for how to set up a suitable terminal emulator.

### 3.2.3 Connect the terminal to the ST Micro Connect

Assuming the serial cable supplied can be used (see [Section 6.3: RS232 serial connection on page 13](#)), connect the ST Micro Connect to the terminal emulator and then apply power to the ST Micro Connect. The LEDs on the front panel cycle, and a brief message is printed to the terminal. A command prompt similar to the following should be displayed at your terminal:

```
ST Micro Connect version 1.50 (Apr 19 2001 10:43:28)
(c) Copyright STMicroelectronics
>
```

Enter `help` for a list of the available commands. [Chapter 9: Monitor interface on page 24](#) describes the command interface.

### 3.2.4 Configure the ST Micro Connect

- 1 Enter the IP address of the ST Micro Connect, using the following command:

```
ipaddr <IP address>
```

The <IP address> is entered in 'dotted decimal' notation, for example:

```
ipaddr 138.198.7.25
```

- 2 Enter the subnet mask.

The `ipaddr` command also sets the subnet mask depending on the class of the IP address entered. If a subnetwork is not being used, `ipaddr` sets the correct value for the subnet mask. If a subnetwork is being used then the `subnet` command should be used to enter the subnet mask appropriate to your network. For example:

```
subnet 255.255.128.0
```

If a subnetwork is not used, the `subnet` command is not required as the subnet mask is set automatically.

- 3 Enter the gateway address. If there is no gateway, ignore this step.

The gateway is a machine to which the ST Micro Connect sends packets if the destination is not on the same subnetwork as the ST Micro Connect. For example, if the ST Micro Connect is on a subnet and is communicating with a host on the main network. For example:

```
gateway 138.198.35.16
```

- 4 Verify the configuration.

Enter the `config` command to ensure that the information entered is correct. For example:

```
> config
Internet address : 138.198.7.12
Subnet mask      : 255.255.128.0
Gateway         : 138.198.35.16
Ethernet Address : 00:00:c0:34:da:ab
```

*Note:* The Ethernet address is hard coded into the ST Micro Connect and is unique for every ST Micro Connect produced. It cannot be changed.

- 5 Save the configuration

The configuration data entered can be saved to non-volatile memory so that it is retained when the ST Micro Connect is switched off. Use the `nvsave` command to do this, for example:

```
> nvsave
Saved configuration to NVRAM
Reboot the ST Micro Connect for settings to take effect
```

Power cycle the ST Micro Connect, and then check the configuration using the `config` command.

Once the ST Micro Connect has been configured and tested, it is ready to be connected to the network and used. The terminal emulator can be left connected, see [Chapter 9: Monitor interface on page 24](#).

### 3.3 Connect to Ethernet

To connect the ST Micro Connect to the Ethernet, carry out the following steps.

- 1 Plug a suitable length of UTP Ethernet cable from the required Ethernet hub to the Ethernet port of the ST Micro Connect.
- 2 Plug the target development system into the 26-way IDC connector using the supplied 26-way IDC cable.

### 3.4 Testing Ethernet configuration

Once the ST Micro Connect is configured (see [Section 3.2: Configuration for Ethernet on page 6](#)) and connected on the network, (see [Section 3.3: Connect to Ethernet on page 9](#)) it should be visible on the network. Use the `ping` command on the host to check that the ST Micro Connect is there. For example, using the example in [Section 3.2.1](#):

```
> ping 138.198.7.12
138.198.7.12 is alive
```

If the ST Micro Connect does not respond, then something has gone wrong with the configuration steps above. Check the configuration information is correct.

It is also possible to telnet into the ST Micro Connect, for example:

```
telnet 138.198.7.12
```

connects to the ST Micro Connect and returns a command line identical to the one on the serial port. If necessary the configuration may be edited using the ST Micro Connect command interface.

The ST Micro Connect can only support one telnet connection at a time.

## 4 Installation on the parallel port

Parallel port connection is supported on Windows 95, 98, NT, 2000 and XP platforms.

To install ST Micro Connect for use via the parallel port the following steps should be carried out. The following sections describe these steps in detail.

- 1 Connect the ST Micro Connect parallel port to the PC and plug in the target development system.
- 2 Install the appropriate device driver on the PC.

Once the ST Micro Connect is correctly installed, verify operation with the toolset as described in the relevant toolset documentation.

### 4.1 Connection via parallel port

- 1 Connect the 25-way D-type parallel port on the ST Micro Connect to the parallel port on the Windows PC using the parallel port cable.
- 2 Plug the target development system into the 26-way IDC connector using the supplied 26-way IDC cable.
- 3 Connect the ST Micro Connect to the power supply and switch the power on at the ST Micro Connect front panel.

The **ON** LED illuminates as soon as the power is switched on and the LEDs on the ST Micro Connect front panel cycle for a few seconds to indicate that the ST Micro Connect software is running. For a description of the meaning of the LEDs, see [Chapter 7: LEDs on page 16](#).

### 4.2 Installing the device driver

The device driver for the parallel port is installed by running **setup.exe** which is supplied on the CD-ROM that accompanies the ST Micro Connect. Follow the instructions for parallel port installation provided by the **setup.exe** installation routine.

## 5 Installation on the USB

USB connection is supported on Windows 98, 2000 and XP platforms.

To install ST Micro Connect for use via the USB port, the following steps should be carried out. The following sections describe these steps in detail.

- 1 Connect the ST Micro Connect USB to the PC and plug in the target development system.
- 2 Install the appropriate device driver on the PC.

Once the ST Micro Connect is correctly installed, verify operation with the toolset as described in the relevant toolset documentation.

### 5.1 Connection via the USB port

- 1 Plug the USB cable into the USB port of the ST Micro Connect and connect the other end into the USB port of the PC.
- 2 Plug the target development system into the 26-way IDC connector using the supplied 26-way IDC cable.
- 3 Connect the ST Micro Connect to the power supply and switch the power on at the ST Micro Connect front panel.

The **ON** LED illuminates as soon as the power is switched on and the LEDs on the ST Micro Connect front panel cycle for a few seconds to indicate that the ST Micro Connect software is running. For a description of the meaning of the LEDs, see [Chapter 7: LEDs on page 16](#).

*Note: The ST Micro Connect should not be connected and switched on while installing Windows. If this happens the device driver must be re-installed.*

### 5.2 Installing the device driver

The USB device driver software is supplied on CD-ROM with the ST Micro Connect.

Once the ST Micro Connect is connected and powered on for the first time the PC starts looking for a device driver. The different versions of Windows give slightly different dialog boxes, however, the installations follow the same general steps.

- 1 In the **Add New Hardware Wizard**, click on **Next**.
- 2 When a prompt is displayed to search for the best (recommended) driver for the device, click on **Next**.  
Windows then prompts you to specify where to find the driver, either a floppy disk, CD-ROM or to specify an address.
- 3 Insert the device driver media (supplied with the ST Micro Connect) and click on the appropriate selection.
- 4 Once Windows has found the device driver, click on **Next** to install.
- 5 Windows reports that it is building the information database and prompts when it has finished. Click on **Finish** and the device driver is installed.

If multiple ST Micro Connects are being installed on a single Windows PC then, once the first device driver is installed, Windows finds the driver software on the hard disk for subsequent devices and automatically installs it when the additional ST Micro Connects are connected and powered on.

To verify that the device driver is correctly installed, carry out the following.

- 1 Start up the Windows Device Manager.
- 2 Click on ST debug interfaces.

The ST Micro Connect should be listed in the following format:

***name Ethernet\_address***

Where ***name*** is allocated by Windows and ***Ethernet\_address*** is the address allocated to the specific ST Micro Connect device.

The same information is also listed under device properties in the Device Manager.

Either the name or the Ethernet address can be used to reference the ST Micro Connect, for example, from the debugger. The Ethernet address is always unique, the name could change between Windows PC installations.



# 6 Connectors

## 6.1 The ST Micro Connect front panel

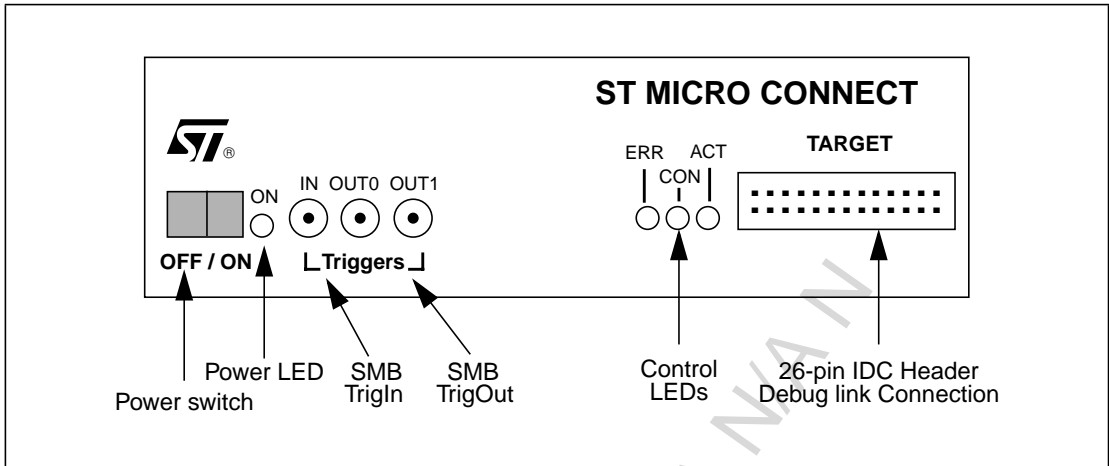


Figure 1: ST Micro Connect front panel

## 6.2 The ST Micro Connect rear panel

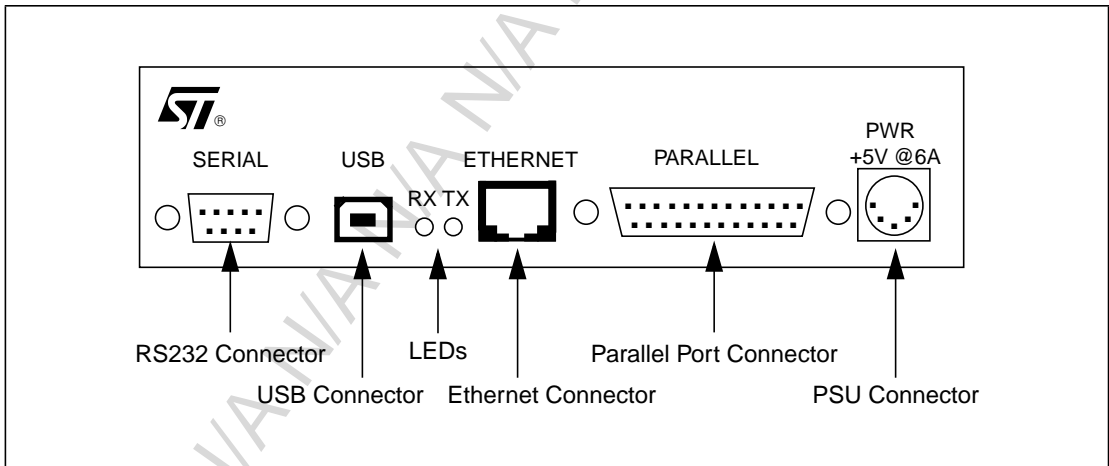


Figure 2: ST Micro Connect rear panel

## 6.3 RS232 serial connection

The standard RS232 9-pin D connector is used to connect the ST Micro Connect to a VT100 terminal emulator to allow initial network configuration and diagnostic message support.

## 6.4 Debug link connection

The ST Micro Connect debug link connector is a 26-pin male IDC header that allows connection to a target board based on ST microprocessors with on-chip emulation features (for example, ST20). The specific usage of the DLINK $n$  pins for each device is described in [Chapter 8: Dedicated target circuitry on page 17](#).

[Table 2](#) shows the generic pin-out of this debug link connector.

Pin number	Host connection	Pin number	Host connection
1	DLINK0	2	Ground
3	DLINK1	4	Ground
5	DLINK2	6	Ground
7	DLINK3	8	Ground
9	DLINK4	10	Ground
11	DLINK5	12	Ground
13	DLINK6	14	Ground
15	DLINK7	16	Ground
17	DLINK8	18	Ground
19	DLINK9	20	Ground
21	DLINK10	22	Ground
23	DLINK11	24	3.3V
25	DLINK12	26	2.5V

**Table 2: Debug link connector pin-out**

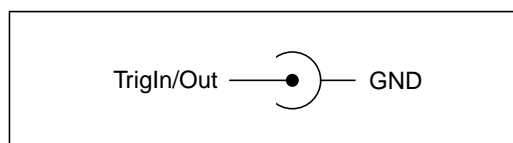
*Note:* The power pins, 3.3V (pin 23) and 2.5V (pin 25) are provided to power voltage interface between the ST Micro Connect and the target board, but not to power the target board itself. The maximum consumption allowed is 0.5A on each power pin.

## 6.5 TrigIn/TrigOut SMB coaxial connectors

The three coaxial SMB connectors, **TrigIn**, **TrigOut0** and **TrigOut1**, on the front panel are used to connect the ST Micro Connect to a Logic State Analyzer. They are used to signal between the host, target and Logic State Analyzer when an event occurs. If, for instance, an event occurs on the target processor, the TRIGOUT0 signal is triggered which could start the Logic State Analyzer tracing an external event, so aiding software/hardware debugging.

The usage of the TRIGIN, TRIGOUT0 and TRIGOUT1 signals depends on the target processor.

See [Chapter 8: Dedicated target circuitry on page 17](#) for details of dedicated target circuitry.



## 6.6 IEEE 1284 parallel port connector

The ST Micro Connect can also connect to the host via the IEEE1284 parallel port connector. This can be connected to a standard PC parallel port. This connector uses a 25-pin D socket.

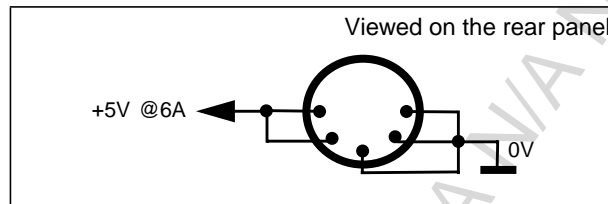
*Note: ECP, nibble and byte modes are supported.*

## 6.7 USB port connector

The ST Micro Connect can be connected to the host via the USB connector.

## 6.8 Power supply connector

The ST Micro Connect uses a DIN 41254 power connector. The voltage range required is 5V DC.



## 6.9 Cables

The following cables are supplied with the ST Micro Connect.

- 9-way female to 9-way male D type straight through serial port cable - 1,8m (RS232).
- 25-way male to 25-way D type male straight through cable - 0,9m (parallel port).
- A standard USB cable.
- Two SMB to BNC coaxial cables (TrigIn TrigOut).
- 26-way debug link cable - 0.5 m. This cable depends on the target device and is described in [Chapter 8: Dedicated target circuitry on page 17](#).

# 7 LEDs

## 7.1 Front panel LEDs

The front panel LEDs are shown in [Figure 1: ST Micro Connect front panel on page 13](#).

The **ON** LED indicates whether or not the ST Micro Connect is powered. When illuminated it indicates that 3,3V is present on the board.

When illuminated the **ERR** LED indicates that an error has been detected.

When illuminated the **ACT** LED indicates that there is read or write activity occurring on the debug link connection.

The **CON** LED indicates whether the ST Micro Connect is in use. When illuminated it indicates that the ST Micro Connect is connected and is actively being used. If it is not illuminated the ST Micro Connect is available for use.

## 7.2 Rear panel LEDs

The rear panel LEDs are shown in [Figure 2: ST Micro Connect rear panel on page 13](#).

Two LEDs marked **RX** and **TX** light up when the ST Micro Connect is either receiving or transmitting packets on the Ethernet or parallel port.

## 7.3 Fault indicators

The control LEDs on the ST Micro Connect front panel flash on and off in different patterns to indicate the status of the ST Micro Connect. When the software is correctly configured the LEDs illuminate in a cyclical pattern for a few seconds when the ST Micro Connect is powered on.

The ST Micro Connect may be upgraded by software, see [Appendix B: Flash upgrades on page 28](#). If a software upgrade fails, all the LEDs flash on and off together in 1 second pulses.

# 8 Dedicated target circuitry

## 8.1 ST20 features

### 8.1.1 ST20 debug link pin-out

Pin number	Host connection	Target connection
1	Reserved	Do Not Wire
3	TRIGIN	TRIGOUT
5	TRIGOUT0	TRIGIN
7	Reserved	Do Not Wire
9	TMS (Out)	TMS (In)
11	TCK (Out)	TCK (In)
13	TDO (Out)	TDI (In)
15	TDI (In)	TDO (Out)
17	NOT_RST (Out)	NOT_RST (In)
19	NOT_TRST (Out)	NOT_TRST (In)
21	Reserved	Do Not Wire
23	Reserved	Do Not Wire
25	Reserved	Do Not Wire
Even numbers 2 to 20	GROUND	GROUND
22	GROUND	Do Not Wire
24	3.3v	Do Not Wire
26	2.5v	Do Not Wire

Table 3: ST20 debug link connector pin-out

### 8.1.2 ST20 debug link cable

The debug link cable for the ST20 is a 26- to 20-way cable which is 0.5 m in length. Only the pins from 1 to 20 are wired. The pins from 21 to 26 are unused, see [Figure 3](#).

The debug link for an ST20 device is based on the JTAG Standard with the corresponding signals (TMS, TCK, TDI, TDO, nTRST), together with additional signals (NOT\_RST, TRIGIN, TRIGOUT) specific to the ST20 toolset.

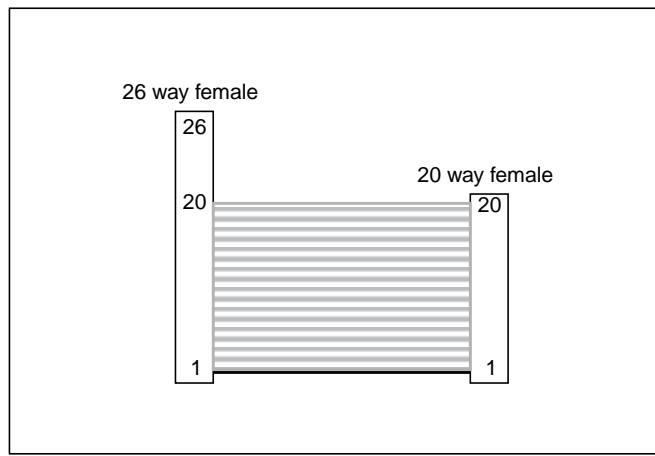


Figure 3: 26-way to 20-way debug link cable

### 8.1.3 Recommended ST20 target circuitry

To ensure correct connection to a target ST20 device, the circuit shown in [Figure 4](#) should be used.

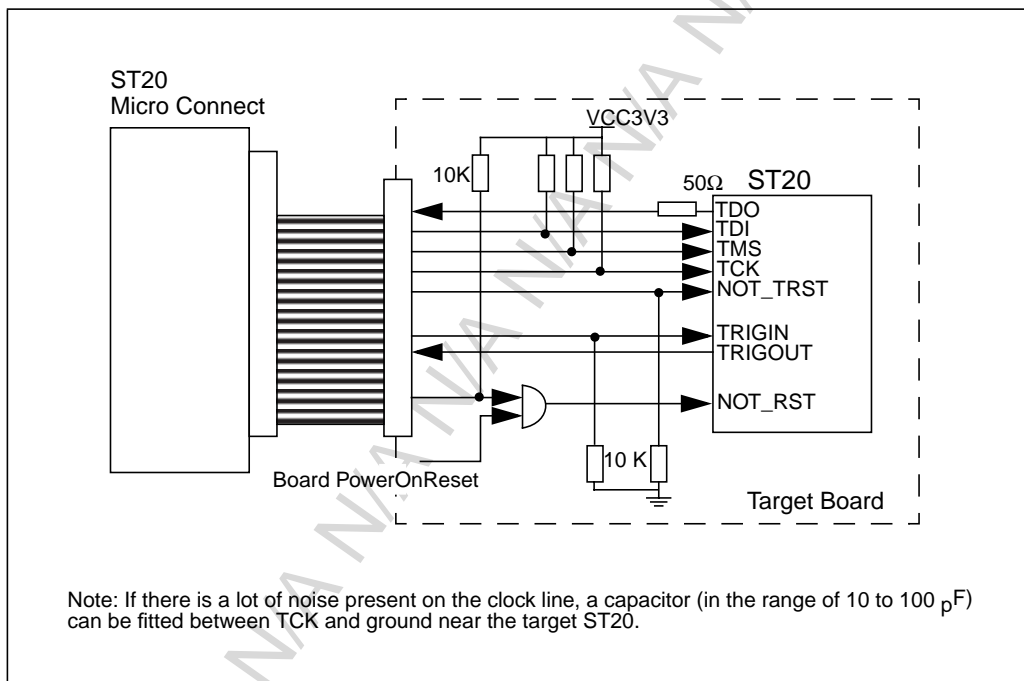


Figure 4: Recommended ST20 target circuitry

### 8.1.4 ST20 trigger connectors

The TRIGIN input level can be read by the host software.

The TRIGOUT0 signal can be set to level “1” either by the JTAG\_TRIGGER\_IN signal (Dlink connector pin 3) or by the host software, allowing both the target board and the host to trigger a Logic State Analyzer.

The TRIGOUT1 connector is not used.

## 8.2 ST40 features

### 8.2.1 ST40 debug link pin-out

Pin number	Host connection	Target connection
1	TCK (Out)	TCK (In)
3	NOT_TRST (Out)	NOT_TRST (In)
5	TDI (In)	TDO (Out)
7	NOT_ASEBRK	NOT_ASEBRK
9	TMS (Out)	TMS (In)
11	TDO (Out)	TDI (In)
13	NOT_RST	NOT_RST (In)
15	STATUS0 (In)	STATUS0 (Out)
17	STATUS1 (In)	STATUS1 (Out)
19	Reserved	Do Not Wire
21	Reserved	Do Not Wire
23	Reserved	Do Not Wire
25	Reserved	Do Not Wire
Even numbers 2 to 20	GROUND	GROUND
22	GROUND	Do Not Wire
24	3.3v	Do Not Wire
26	2.5v	Do Not Wire

Table 4: ST40 debug link connector pin-out

### 8.2.2 ST40 debug link cable

The debug link cable for the ST40 is a 26- to 20-way cable which is 0.5 m in length. Only the pins from 1 to 20 are wired. The pins from 21 to 26 are unused, see [Figure 5](#).

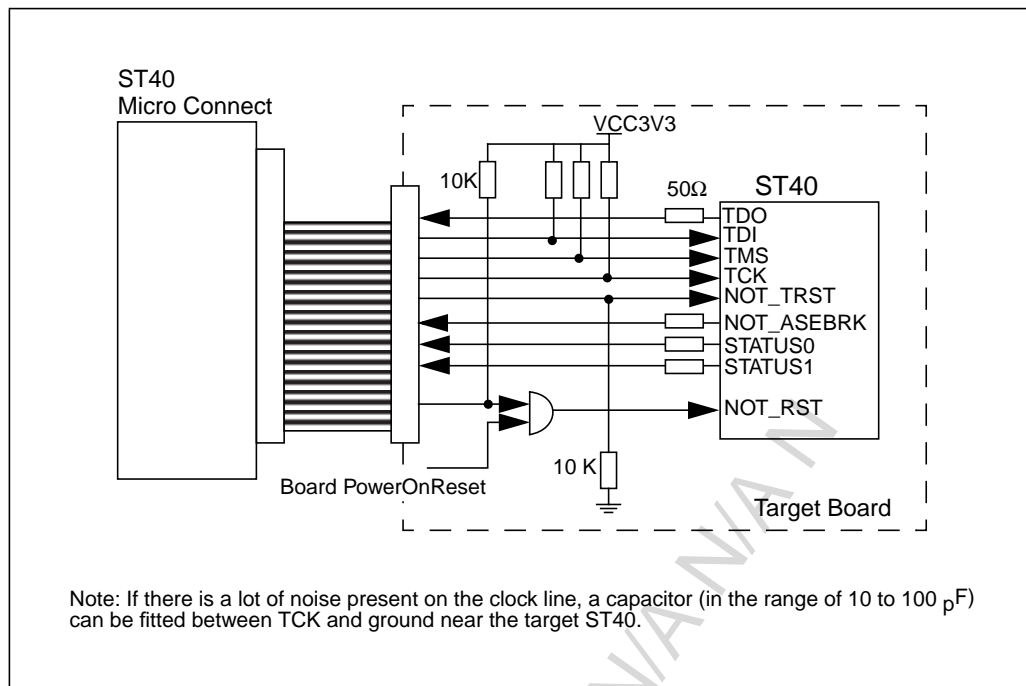
The debug link for an ST40 device is based on the JTAG Standard with the corresponding signals (TMS, TCK, TDI, TDO, nTRST), together with additional signals (NOT\_RST, STATUS0, STATUS1, NOT\_ASEBRK) specific to the ST40 toolset.





## 8.2.4 Recommended ST40 target circuitry

To ensure correct connection to a target ST40 device, the circuit shown in [Figure 7](#) should be used.



**Figure 7: Recommended ST40 target circuitry**

## 8.3 ST200 features

### 8.3.1 ST200 debug link pin-out

Pin number	Host connection	Target connection
1	Reserved	Do Not Wire
3	TRIGIN <sup>a</sup>	TRIGOUT <sup>a</sup>
5	TRIGOUT0 <sup>a</sup>	TRIGIN <sup>a</sup>
7	Reserved	Do Not Wire
9	TMS (Out)	TMS (In)
11	TCK (Out)	TCK (In)
13	TDO (Out)	TDI (In)
15	TDI (In)	TDO (Out)
17	NOT_RST	NOT_RST (In)
19	NOT_TRST (Out)	NOT_TRST (In)
21	Reserved	Do Not Wire
23	Reserved	Do Not Wire
25	Reserved	Do Not Wire
Even numbers 2 to 20	GROUND	GROUND
22	GROUND	Do Not Wire
24	3.3v	Do Not Wire
26	2.5v	Do Not Wire

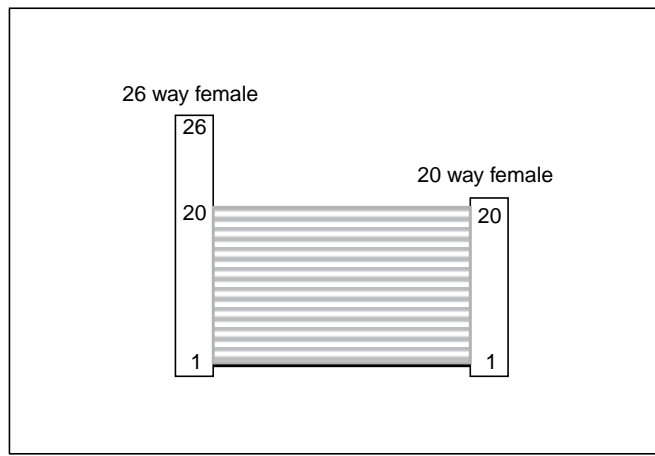
**Table 5: ST200 debug link connector pinout**

a. For ST220 boards, this pin is Reserved, Do Not Wire.

### 8.3.2 ST200 debug link cable

The debug link cable for the ST200 is a 26- to 20-way cable which is 0.5 m in length. Only the pins from 1 to 20 are wired. The pins from 21 to 26 are unused, see [Figure 8](#).

The debug link for an ST200 device is based on the JTAG Standard with the corresponding signals (TMS, TCK, TDI, TDO, nTRST), together with an additional signal (NOT\_RST) specific to the ST200 Toolset.

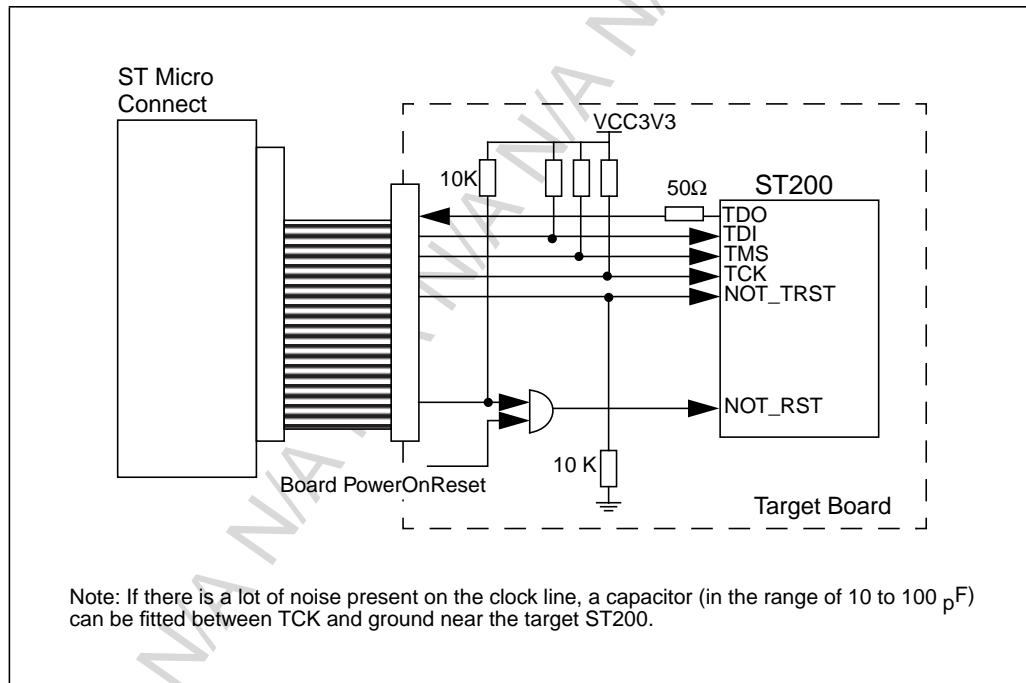


**Figure 8: 26-way to 20-way debug link cable**

### 8.3.3 Recommended ST200 target circuitry

To ensure correct connection to a target ST200 device, the circuit shown in [Figure 9](#) should be used.

*Note:* An ST200 specific ST Micro Connect is not available, either the ST20 or ST40 specific ST Micro Connect can be used instead. See [Chapter 11: Ordering information on page 26](#).



**Figure 9: Recommended ST200 target circuitry**

## 9 Monitor interface

When using the ST Micro Connect, it may be useful to leave the serial port connected. Information messages can then be printed out via the terminal emulator. Alternatively a telnet connection can be used.

### 9.1 Commands available

The `help` command gives a list of commands available. Typing:

```
help <command_name>
```

provides details of the specified command. The possible command names are given in [Table 6](#).

Command	Description
<code>config</code>	Displays the current configuration settings for the ST Micro Connect. These are the values that the <code>nvsave</code> command uses.
<code>downgrade</code>	Reverses a flash upgrade. The ST Micro Connect can be upgraded to a new software version by flashing the new version into the on-board flash memory. The <code>downgrade</code> command provides a way of reversing a flash upgrade, and reverting to the original software the ST Micro Connect was shipped with. See <a href="#">Appendix B: Flash upgrades on page 28</a> . Use this command with caution.
<code>estats</code>	This command prints a list of low level Ethernet statistics. ST Micro Connect does not have a Simple Network Management Protocol (SNMP) capability.
<code>etheraddr</code>	Display the Ethernet address.
<code>gateway &lt;IP Address&gt;</code>	This command sets the internet address of the gateway (router). Where <code>&lt;IP Address&gt;</code> is given in dotted decimal form, for example <code>138.198.35.16</code> . Use the <code>nvsave</code> command to save this parameter to nonvolatile RAM.
<code>ipaddr &lt;IP Address&gt;</code>	This command sets the ST Micro Connect internet address. Where <code>&lt;IP Address&gt;</code> is given in dotted decimal form, for example <code>138.198.7.25</code> . Use the <code>nvsave</code> command to save this parameter to nonvolatile RAM.
<code>nvload</code>	The <code>nvload</code> command loads whatever is contained in the nonvolatile memory. This may be used to restore settings. This is performed automatically when the ST Micro Connect is first powered on.
<code>nvsave</code>	<code>nvsave</code> saves the current configuration information into nonvolatile memory. This ensures that the ST Micro Connect retains its settings after a power cycle.

**Table 6: ST Micro Connect commands**

Command	Description
<code>ping &lt;IP Address&gt;</code>	<p>This command attempts to send an ICMP ping packet to the specified host. It is useful for tracking down network problems. ST Micro Connect does not support DNS lookup, so <code>&lt;IP Address&gt;</code> must be in dotted decimal form, for example <code>138.198.35.30</code>.</p> <p><code>ping</code> performs exactly the same function as <code>ping</code> on the host. For example:</p> <pre>% ping 138.198.35.30 138.198.35.35 is alive % ping 138.198.7.150 no answer from 138.198.7.150</pre>
<code>quit</code>	(Telnet only). If connected via a telnet session, this command terminates the connection. If connected via the serial port, it does nothing. The serial command prompt runs continuously.
<code>reboot</code>	Reboots, that is, hard resets the ST Micro Connect. If used via telnet, <code>reboot</code> quits the telnet session and performs the reset.
<code>status</code>	Display ST Micro Connect status. The ST Micro Connect is a flexible device, which may be used in different ways. It supports downloading of code onto the ST Micro Connect, which can then access the network. The <code>status</code> command prints a string showing what the downloaded code is currently doing.
<code>subnet &lt;IP Address&gt;</code>	<p>This command sets the internet subnet mask.</p> <p>Where <code>&lt;IP Address&gt;</code> is given in dotted decimal form, for example <code>255.255.128.0</code>.</p> <p>Use the <code>nvsave</code> command to save this parameter to nonvolatile RAM.</p>
<code>version</code>	Prints the version number of the ST Micro Connect software operating system used, and also the processor type and speed of the ST Micro Connect hardware.
<code>what</code>	Display code downloaded. The ST Micro Connect is a flexible device, which may be used in different ways. It supports downloading of code onto the ST Micro Connect, which can then access the network. The <code>what</code> command prints out a string identifying what code is currently loaded onto the ST Micro Connect.

**Table 6: ST Micro Connect commands**

## 10 Field support

STMicroelectronics' products are supported worldwide through Sales Offices and authorized distributors.

## 11 Ordering information

Description	Order number
ST20 Micro Connect Host Target Interface	ST20-CONNECT/WIN, ST20-CONNECT/SUN, ST20-CONNECT/LNX
ST40 Micro Connect Host Target Interface	ST40-CONNECT/WIN, ST40-CONNECT/SUN, ST40-CONNECT/LNX
ST200 Micro Connect Host Target Interface	ST200-CONNECT

**Table 7: Ordering information**

*Note: The products include a bundled toolset as appropriate for the order code. The ST200 product is supplied with all three host versions.*

## A Setting up a terminal emulator

### A.1 Windows PCs

The terminal emulator program supplied as standard under Windows is called **Hyperterminal**. It is can be accessed from the **Start** menu, however its location varies for different versions of windows.

**Start > Programs > Accessories > (Communications >) Hyperterminal.**

- 1 The first time Hyperterminal is used it may pop up a dialog box prompting you to install a modem before making the connection. Click on **No**.
- 2 The **Connection Description** dialog box is displayed. Enter a suitable name, for example **ST Micro Connect Terminal**, select an icon and click on **OK**.
- 3 The **Phone number** dialog box is displayed. From the scroll list, select the COM port to which the ST Micro Connect is connected.
- 4 The **Properties** dialog box is displayed. Set:
  - **Bits per second** to 9600,
  - **Hardware flow control** to **None**,
  - **Data bits** to 8,
  - **Parity** to **None**,
  - **Stop bits** to 1.
- 5 Click on **OK**. Once the terminal is physically connected to the ST Micro Connect, see [Section 3.2.3: Connect the terminal to the ST Micro Connect on page 7](#), commands can be entered to the ST Micro Connect.

On exiting Hyperterminal, the terminal settings can be saved for future sessions.

### A.2 Linux PCs

Use minicom or another terminal emulator utility to set the serial port settings as described in [Section A.1](#).

### A.3 Solaris machines

The serial port of the ST Micro Connect can be connected to a serial port on a Solaris machine. A suitable cable must be used.

When the ST Micro Connect is connected to a serial port, the **tip** program can be used to communicate with the ST Micro Connect. In order to do this, make an entry in the **/etc/remote** file, which describes connections that can be made with **tip**. The following example shows an entry for a ST Micro Connect called **prefix**, on the device (serial port) **/dev/ttyb**. The baud rate is set to 9600 and parity is disabled.

```
prefix|hti:br#9600:dv=/dev/ttyb:nb:pa:none:!hf
```

## B Flash upgrades

The ST Micro Connect firmware is contained in flash ROM. This means it can be upgraded easily by software. This is accomplished by running a program on a host which communicates with the ST Micro Connect via the Ethernet, parallel port or USB port and loads the new version of the software into the flash ROM. New versions of the software together with the host program to load it into the ST Micro Connect are available from STMicroelectronics Limited Sales Offices and authorized distributors.

### B.1 Software versions

The ST Micro Connect contains two versions of the software, the original version it was supplied with, and the latest version. The original version is never overwritten, it is always present. Therefore, if a flash upgrade fails for some reason, for example because the power fails during the flash upgrade, this is detected and the original version of the software is used.

It is also possible to force the software to return to the original version. This is accomplished by using the **downgrade** command on the command monitor. **Use this with caution.** The only way to return to the latest version of the software is to re-install a flash upgrade. The only reason this command would be useful is in the case where the newly upgraded software did not function correctly. It would then be possible to reprogram the ST Micro Connect.

### B.2 Error warning

When the ST Micro Connect is powered on, if all the lights flash on and off approximately once a second, this means that neither of the two software versions are correct (see [Section 7.3: Fault indicators on page 16](#)). This is very unlikely to happen, but is possible. In this case, the only course of action is to contact your local STMicroelectronics Limited Sales Office or distributor, in order to reprogram the ST Micro Connect.



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## Revision history

Reference	Change
<b>Version D</b>	
	Updated datasheet to reflect current product. Updated product code and legal notice.
<b>Version C</b>	
	Updated datasheet to reflect interim product.
<b>Version B</b>	
Throughout	Updated datasheet to use latest template and updated text where required. Added details of Windows XP and Linux support.
<b>8 Dedicated target circuitry</b> <i>Section 8.3: ST200 features on page 22</i>	Created new section.
<b>Version A</b>	
	First release

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