RS232 interface protocol h/p/cosmos coscom functions

Only ASCII characters are transferred.

The basic unit of encapsulation, which is passed on the communication link is a data packet. Each packet contains a start character, a header, optional data units, a checksum and a end character

Transmission data packet

SOH	Header	Data Unit	Checksum	ETB
1	2 to 4	5 to n	n+1 to n+2	n+3

SOH: ASCII character 0x01

Header
Contains three characters
1. character: letter, which defines the category of the data unit
2. and 3. character: number with 2 digits

Header		
C	1	2

Data Unit
The data unit is an ASCII string, which is empty or composed of one or several numeric values or short texts.
The format is equivalent to the rules, which are used with the function printf in the programming language "C".
Multiple numeric strings are separated by "white spaces".
Multiple text strings are separated by the ASCII control character GS (0x1d).
In the following CosCom functions the printf format string is exactly declared.

Checksum
Sum of header and data unit modulo 100.

ETB
ASCII character 0x17

Size of Receive and Send Buffers

256 Bytes or more are recommended.

Baud Rate and Data Format

RS232, 9600 bits/s, 8 data bits, no parity bit, 1 stop bit

Information Transfer, Types of Data Packets, Flow control, Error Detection and Correcting

Personal Computer		h/p/cosmos treadmill

1) Information request with an empty data unit:

Request	>>	
	<<	ACK
	<<	Reply
ACK	>>	

2) Information request with a data unit to be assumed by the treadmill

Info	>>	
	<<	ACK
	<<	Reply
ACK	>>	

There is a client/server relationship between the device and the PC. The device serves the requests of the PC:

The device answers a request always with a reply of an identical header.

A request without a data unit (referred as "Request" in the charts) is needed to fetch data from the treadmill.

A request with a data unit (referred as "Info" in the charts) is needed to control the device. If the device has processed the received data unit successfully, the reply contains the same data unit as the request. Otherwise the data unit in the corresponding reply is different.

3) Transmission errors (ETB not disturbed)

disturbed data packet	>>	
	<<	NAK (wrong checksum)
repeated data packet	>>	
	<<	ACK

4) Bit error in the end character (ETB disturbed)

disturbed data packet	>>	
		receive timeout received characters are dropped
overflow of send timeout repeated data packet max. 5 trials	>>	
	<<	ACK

Every data packet is confirmed by an ACK (ASCII control character 0x06) or with a NAK (0x15), if the checksum is wrong. A NAK forces a resending of the not acknowledged data packet.

If the end character is disturbed, the receiver is canceling the data packet after a receive timeout. The sender receives no ACK or NAK character and repeats the data packet after a send timeout. After five trials with no answer the sender gives up.

A disturbed ACK character is interpreted as a NAK.

Timeouts:

1) receive timeout (10 s)

2) send timeout (must be longer as an receive timeout, 11 s)

h/p/cosmos coscom functions:

The following list gives an overview of the released protocol versions and their relationships to the corresponding firmware and hardware. If necessary the specification shows differences between the protocol versions and/or which minimum version number is required to use a defined function.

MCU 2 (4 displays)			
Firmware Version	V 2.25 or higher	V 2.30 or higher	
Date	18.11.1996	04.01.2001	
Protocol Version	1.20	1.30	

MCU 4 (6 displays)			
Firmware Version	V 2.02.5 or higher	V 2.02.6 or higher	V 2.02.8 or higher
Date	10.05.1999	19.11.2000	15.01.2002
Protocol Version	2.01	2.01 (COM1/2)	2.03 (COM1/2)

MCU 4 (6 displays)			
Firmware Version	V 4.01.1 or higher	V 4.0?.? or higher	
Date	01.02.2005	??.??.2006	
Protocol Version	2.04	2.05	

[General Requests]

[Treadmill-Ergometer Requests]

[Ladder-Ergometer Requests]

Bicycle-Ergometer Requests

General Requests

Category Version

V00	Request/Reply 1.20 or higher	Protocol Version	%3u	Release.Version * 100 1xx MCU 2 Control Panel (4 LCD displays) 2xx MCU 4 Control Panel (6 LCD displays)

Category Type

Y00	Request/Reply 2.03 or higher	Type	%1u	0 Treadmill-Ergometer
				1 Ladder-Ergometer
				2 Bicycle-Ergometer

Category Failsafe

THIS IS A VERY IMPORTANT SAFTEY COMMAND.
IT SHOULD BE IMPLEMTED BY EVERY CONTROL SOFTWARE!

F00	Request/Info/Reply 1.30 or higher		%u	0: Disable Failsafe (Default) 1 - 250 1/10 seconds (= 0.1 - 25.0 seconds): Enable communication timeout for failsafe (STOP)

Category Time

T00	Request/Reply 1.20 or higher	Actual Time	%02u:%02u:%02u	hour:minute:second
T01	Request/Info/Reply 2.05 or higher	Actual Time	%02u:%02u:%02u	hour:minute:second
T10	Request/Reply 1.20 or higher	Last Lap Time (= Actual Time 2.01 or higher)	%02u:%02u:%02u	hour:minute:second

Category Heart Rate

P00	Request/Reply 1.20 or higher	Valid Heart Rate	%1u	0 No

				1 Yes
P01	Request/Reply 1.20 or higher	Heart Rate	%u	Beats/min
P10	Request/Reply 1.20 or higher	Heart Rate Control Status	%1u	0 Inactive
				1 Up (increasing load)
				2 Down (reducing load)
				3 Lock (heart rate okay)
				4 Failure
				2.01 or higher: bug: wrong return values 2.04 or higher: bug fixed
P11	Request/Info/Reply 1.20 or higher	Heart Rate Control (HRC)	%1d	0 Stop (Initialization)
				1 Start
				2.01 or higher: bugs: wrong return value; works only in manually selected cardio mode 2.04 or higher: bugs fixed; HRC works in manual mode too
P12	Request/Info/Reply 1.20 or higher	HRC Heart Rate 2.01 or higher: Sets HRC Min. and Max. Hearte Rate Values 2.04 or higher: Use P15 and P16 instead	%u	Beats/min
P13	Request/Info/Reply 1.20 or higher	HRC Maximum Speed	%4.2f	Treadmill: m/s Ladder: m/min (1.30 / 2.03 or higher) Bicycle: n/a
P14	Request/Info/Reply 1.20 or higher	HRC Maximum Elevation	%3.1f	Treadmill: H/L * 100 % Ladder: n/a

				Bicycle: n/a 2.01 or higher: Treadmill: H/L * 1000 % 2.04 or higher: Treadmill: H/L * 100 %
P15	Request/Info/Reply 2.04 or higher	HRC Min. Heart Rate	%u	Beats/min
P15	Request/Info/Reply 2.04 or higher	HRC Max. Heart Rate	%u	Beats/min

Example: Use the Heart Rate Control

PC	Treadmill	
'SOH'P11026'ETB'		HRC Initialization Request
	'ACK'	
	'SOH'P11026'ETB'	Reply
'ACK'		
'SOH'P133.8990'ETB'		Set Max. HRC Speed to 14 km/h
	'ACK'	
	'SOH'P133.8990'ETB'	Reply
'ACK'		
'SOH'P141078'ETB'		Set Max. HRC Elev. to 10 %
	'ACK'	
	'SOH'P1410.072'ETB'	Reply
'ACK'		
'SOH'P1514031'ETB'		Set Min. Heart Rate to 140
	'ACK'	
	'SOH'P1514031'ETB'	Reply
'ACK'		
'SOH'P1615033'ETB'		Set Max. Heart Rate to 150
	'ACK'	
	'SOH'P1615033'ETB'	Reply
'ACK'		
'SOH'U201.3986'ETB'		Set Countdown Speed to 5 km/h
	'ACK'	
	'SOH'U201.3986'ETB'	Reply

'ACK'		
'SOH'U22538'ETB'		Set Countdown Time to 5 s
	'ACK'	
	'SOH'U22538'ETB'	Reply
'ACK'		
'SOH'S021.3984'ETB'		After 5 seconds (Countdown): Set Program Speed to 5 km/h = HRC Start Speed
	'ACK'	
	'SOH'S021.3984'ETB'	Reply
'ACK'		
'SOH'P11127'ETB'		Start HRC
	'ACK'	
	'SOH'P11127'ETB'	Reply
'ACK'		
'SOH'P1077'ETB'		Request HRC Status
	'ACK'	
	'SOH'P10328'ETB'	Reply HRC Status = 3 (Locked)
'ACK'		

Category Performance

J00	Request/Reply 2.03 or higher Request/Info/Reply 2.04 or higher	Weight	%u	Weight (kg)
J01	Request/Reply 2.03 or higher	Energy	%6.1f	Energy (kJ)
J02	Request/Reply 2.03 or higher	Power	%5.2f	Power (W)

Category User Panel

U00	Request/Info/Reply 1.20 / 1.30	Pushbutton	%c	S Stop
				+ Start/Faster
				- Pause/Slower

				H Set Speed/Elevation
				R Set Speed
				E Set Elevation
				U Up
				D Down
U01	Request/Reply 1.20 / 1.30	Display UL	%s	Blinking: Bit 8 = 1
U02	Request/Reply 1.20 / 1.30	Display UR	%s	Blinking: Bit 8 = 1
U03	Request/Reply 1.20 / 1.30	Display LL	%s	Blinking: Bit 8 = 1
U04	Request/Reply 1.20 / 1.30	Display LR	%s	Blinking: Bit 8 = 1
U05	Request/Reply 1.20 / 1.30	Display UL UR LL LR	%sGS%sGS%sGS%s	Blinking: Bit 8 = 1
U10	Request/Info/Reply 2.01 or higher	Pushbutton	%c%c	First character: Pushbutton
				+ Faster/Select
				- Slower/Select
				U Up
				D Down
				E Start/Enter
				S Stop
				F Emergency Stop (2.03 or higher)
				Second character:
				P Pushed
				R Released
U11	Request/Reply 2.01 or higher	Display UL	%4s%1X%1X%1X	Display string (%4s)
				Bit field for blinking *)
				Bit field for points *)
				Bit field for blinking *)

U12	Request/Reply 2.01 or higher	Display LL	%4s%1X%1X%1X	see above
U13	Request/Reply 2.01 or higher	Display UM	%4s%1X%1X%1X	see above
U14	Request/Reply 2.01 or higher	Display LM	%4s%1X%1X%1X	see above
U15	Request/Reply 2.01 or higher	Display UR	%4s%1X%1X%1X	see above
U16	Request/Reply 2.01 or higher	Display LR	%4s%1X%1X%1X	see above
U17	Request/Reply 2.01 or higher	LED Groups	%9X	Indexes of LED groups:
				Manual Profile Cardio Test [5 4 3 2]
				max [5]
				mph m/s km/h m/min [1 2 3 4]
				miles km m [3 4 5]
				<° % [4 5]
				N° Step [1 2]
				Watt KJ Index [1 2 5]
				v ^ [4 5]
				Kg Years Sex [1 2 3]
				Blinking: [Index + A]
				All off: [0]
U18	Request/Reply 2.01 or higher	All Displays, LEDs	%51s	Concatenation of data units
				U11, U12, U13
				U14, U15, U16 and U17
U19	Request/Info/Reply 2.04 or higher	Buzzer control	%u	On-time [ms] Send time to switch buzzer on and/or request last buzzer on-time (auto reset)

U20	Request/Info/Reply 2.04 or higher	Display Countdown Speed	%4.2f	Treadmill: m/s Ladder: m/min Bicycle: n/a
U21	Request/Info/Reply 2.04 or higher	Display Countdown Elevation	%3.1f	Treadmill: H/L * 100 % Ladder: n/a Bicycle: n/a
U22	Request/Info/Reply 2.04 or higher	Display Countdown Time	%1u	s
				Set countdown time for displaying the previously set Countdown Speed and/or Countdown Elevation (Speed or elevation are not set after countdown!)
U23	Request/Info/Reply 2.04 or higher	Mode LED	%1X	Set/Get Mode LED Format: see U17 Use this command after starting with S02 or sending the "Start" key!
U24	Request/Info/Reply 2.05 or higher	Lock User Terminal	%1u	0 no lock
				1 locked Keys Start, +, Up and Down are locked Keys - and Stop stop the machine

The functions U00, U01, U02, U03, U04 and U05 are not supported in this version. They are defined in older versions for remote control of the 4-displays MCU generation. These functions return an empty string (data unit).

*) Character 5 to 7 in the display functions U11 to U16 represent bit fields with the following values:

HEX	BIN	Character in the data unit
0x0	0000	0
0x1	0001	1

0x2	0010	2
0x3	0011	3
0x4	0100	4
0x5	0101	5
0x6	0110	6
0x7	0111	7
0x8	1000	8
0x9	1001	9
0xA	1010	A
0xB	1011	B
0xC	1100	C
0xD	1101	D
0xE	1110	E
0xF	1111	F

Bit pattern for blinking display digits (character 5 in the data unit)

0x0 No blinking digits
0x1 Left digit is blinking
0x2 Middle left digit is blinking
0x4 Middle right digit is blinking
0x8 Right digit is blinking

Bit pattern for display points (character 6 in the data unit)

0x0 No points
0x1 Left point
0x2 Middle point
0x4 Right point
0x8 Colon

Bit pattern for blinking display points (character 7 in the data unit)

0x0 No blinking points
0x1 Blinking left point
0x2 Blinking middle point
0x4 Blinking right point
0x8 Blinking colon

Category Blood Pressure (SunTech TANGO)

Only at COM1 available!

B00	Request/Reply 2.01 or higher	To begin a new Blood Pressure study and initiate a sample (INIT)		
B01	Request/Reply 2.01 or higher	To start a Blood Pressure sample (STRT)		

B02	Request/Reply 2.01 or higher	To stop a Blood Pressure sample (STOP)		
B03	Request/Reply 2.01 or higher	To recall the last TANGO Blood Pressure values (DATA)		
B04	Request/Reply 2.01 or higher	To get the last TANGO message	%5s %c0%03d %c0%03d %c0%03d	Message type *) Status and Systolic *) Status and Diastolic *) Status and Heart Rate *)
B05	Request/Reply 2.01 or higher	To end the Blood Pressure study (ENDD)		
B06	Request/Reply 2.01 or higher	To clear all Blood Pressure readings from TANGO memory (CLRR)		

B00, B01, B02, B03, B05 and B06 discard the last TANGO message in the treadmill protocol memory.

B04 will reply with "NOMES" ..., if no message has been received since the last request.

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Message type:	NOMES	No message received from TANGO
	INITR	Ready message
	0000T	Data message
Status character:	0	Value is acceptable
	!	Value exceeds TANGO alarm value
	?	Value invalid or artifactual

Category Error

Z00	Request/Reply 2.03 or higher	Control Error	%u	Error Number:
				1 Oil Interval Exceeded
				2 Service Interval Exceeded
				21 Elevator Error (Treadmill)
				30 Drive Error (Treadmill)
				50 Drive Error (Treadmill)

Treadmill-Ergometer Requests

Category Speed

S00	Request/Reply 1.20 or higher	Control Status	%1u	0 Stop
				1 Run
				2 Pause
				2.01 or higher: This status is only changed if the user controls with the keyboard or if a communication protocol simulates the user key inputs.
S01	Request/Reply 1.20 or higher	Actual Speed	%4.2f	m/s
S02	Request/Info/Reply 1.20 or higher	Program Speed	%4.2f	m/s
S03	Request/Reply 1.30 or higher	Emergency Stop	%1u	0 Normal Operation
				1 Emergency Stop Activated
S04	Request/Reply 2.03 or higher	Max. Allowed Speed	%4.2f	m/s
S05	Request/Reply 2.03 or higher	Maximal FU Speed	%4.2f	m/s

Example: Read the actual speed of the treadmill

PC	Treadmill	
Request:		
'SOH'S0180'ETB'		Checksum of "S01": 'S'=83 '0'=48 '1'=49
		Sum = 83+48+49 = 180
		Checksum = 180 % 100 = 80
	'ACK' ('0x06')	Treadmill confirms the request
	Reply:	
	Actual speed.:	
	1.50 m/s	
	'SOH'S011.5076'ETB'	Checksum of "S011.50"
		Sum = 83+48+49+49+46+53+48 = 376
		Checksum = 376 % 100 = 76
'ACK'		PC confirms the reply

Example: Set new treadmill speed 8.0km/h = 2.22m/s

Request:		
'SOH'S022.2277'ETB'		Checksum of "S022.22"
		Sum=83+48+50+50+46+50+50=377
		Checksum = 377 % 100 = 77
	'ACK' ('0x06')	Treadmill confirms the request
	Reply:	
	New speed:	
	2.22 m/s	
	'SOH'S022.2277'ETB'	Checksum of "S022.22"
		Sum=83+48+50+50+46+50+50=377
		Checksum = 377 % 100 = 77
		treadmill accelerates to 8.0 km/h
'ACK'		PC confirms the reply

Category Acceleration

A00	Request/Info/Reply 1.30 or higher	Acceleration / Deceleration	%1u	0 None
				1 = 131 s
				2 = 66 s
				3 = 33 s
				4 = 16 s
				5 = 8 s
				6 = 5 s
				7 = 3 s
A01	Request/Info/Reply 2.03 or higher	Acceleration / Deceleration	%u	0 – 65535

A00

The selected time relates to the duration of a speed change from standstill to maximum speed or vice versa. The exact value is calculated as follows: a = v / t = maximum speed / acceleration time. The new acceleration value is used with the next "S02" command.

Example

Acceleration index: 3 = 33 s
Maximum treadmill speed: 22 km/h = 6.11 m/s
Acceleration value: a = (6.11 / 33) m/s² = 0.185 m/s²

A01

The selected value is an increment, which is added to or subtracted from the current internal speed value every 10 milliseconds. The maximal internal speed value is 65535. This command have to be sent after a new speed command, if the default acceleration or the A00 value isn't appropriate. Be very careful with this command. Extreme acceleration values are very dangerous.

Example
Acceleration value: 50
Time for acceleration from 0 to 65535: 65535 / (50 * 100) = 13.1 s
Maximum treadmill speed: 22 km/h = 6.11 m/s
Acceleration value: a = (6.11 / 13.1) m/s² = 0.466 m/s²

Category Distance

D00	Request/Reply 1.20 or higher	Actual Distance	%6u	m
D01	Request/Info/Reply 2.05 or higher	Actual Distance	%6u	m

Category Elevation

E00	Request/Reply 1.20 or higher	Elevator Existence	%1u	0 No Elevation system
				1 Elevation system exists (Fix value in 2.01)
E01	Request/Reply 1.20 or higher	Actual Elevation	%3.1f	(height/length) * 100 %
E02	Request/Reply 1.20 or higher	Direction	%1u	0 Stop
				1 Up
				2 Down
E03	Request/Info/Reply 1.20 or higher	Program Elevation	%3.1f	(height/length) * 100 %

Example: Read the actual elevation of the treadmill

'SOH'E0166'ETB'		Checksum of "E01"
		Sum = 69+48+49 = 166
		Checksum = 166 % 100 = 66
	'ACK' ('0x06')	
	Actual elevation:	
	10.2 %	
	'SOH'E0110.259'ETB'	Checksum of "E0110.2"

		Sum=69+48+49+49+48+46+50=359
		Checksum = 359 % 100 = 59
'ACK'		

Example: Set new elevation (only for treadmills with an elevator)

'SOH'E035.318'ETB'		Checksum of "E035.3"
		Sum=69+48+51+53+46+51=318
		Checksum = 318 % 100 = 18
	'ACK' ('0x06')	
	New elevation:	
	10.2 %	
	'SOH'E035.318'ETB'	Treadmill changes the elevation to 5.3%
'ACK'		

Category Client Daemon

C00	Request/Info/Reply 1.20 or higher	Initialize a client on the treadmill, which will send periodic data concerning to information in the data unit	%uGS%sGS%s...	time of period in seconds, header 1, header 2, ...
		Fixed internal data unit	1GSX00	
C01	Request/Reply 1.20 or higher	Finish C00		
C02	Request/Reply 2.04 or higher	Remote Terminal Protocol		Switch temporarily to the Remote Terminal Protocol. After a receive timeout of 1 second the Remote Terminal Protocol switches back to coscom.

Category CosRec Emulation

X00	Request/Reply 1.20 or higher	CosRec data record	%uGS%uGS%4.2fGS%3.1fGS%luGSZ
			Time [s] ('GS' = 29)

			Heart Rate [1/s]
			Speed [m/s]
			Elevation [%]
			Distance [m]
			Mark for an new time interval Version 1.20 or 1.30: 'Z' or 'SPACE' Version 2.01 or 2.03: 'SPACE'

Example: Get time, heart rate, speed, ... in one record

'SOH'X0084'ETB'		Checksum of "X00"
		Sum=88+48+48=184
		Checksum = 184 % 100 = 84
	'ACK' ('0x06')	
	COSREC record: 872 seconds since start 0 bpm heart rate 2.00 m/s (7.2 km/h) 0.2 % elevation 1086 m distance no new time interval	
	'SOH'X00872'GS'0'GS'2.00 'GS'0.2'GS'1086'GS''SPACE' 13'ETB'	Checksum of "X00872'GS'0'GS'2.00 'GS'0.2'GS'1086'GS''SPACE'"
		Sum=88+48+48+56+55+50+29+48+29 +50+46+48+48+29+48+46+50+29+49+48 +56+54+29+32=1113
		Checksum = 1113 % 100 = 13
'ACK'		

Category Error

Z01	Request/Reply 2.03 or higher	Drive Error	%u	Error Number:
				1 Speed Scan Error (Z00=30)
				2 FU Error (Z00=50)
Z02	Request/Reply 2.03 or higher	Elevator Error	%u	Error Number:
				1 Block/Scan Error (Z00=21)

Ladder-Ergometer Requests

Category Speed

S00	Request/Reply 1.20 or higher	Control Status	%1u	0 Stop

				1 Run
				2 Pause
				2.01 or higher: This status is only changed if the user controls with the keyboard or if a communication protocol simulates the user key inputs.
S01	Request/Reply 1.30 / 2.03 or higher	Actual Speed	%4.2f	m/min
S02	Request/Info/Reply 1.30 / 2.03 or higher	Program Speed	%4.2f	m/min
S03	Request/Reply 1.30 or higher	Emergency Stop	%1u	0 Normal Operation
				1 Emergency Stop Activated
S04	Request/Reply 2.03 or higher	Max. Allowed Speed	%4.2f	m/min
S05	Request/Reply 2.03 or higher	Maximal FU Speed	%4.2f	m/min

Category Acceleration

A00	Request/Info/Reply 1.20 or higher	Acceleration / Deceleration	%1u	0 None
				1 = 131 s
				2 = 66 s
				3 = 33 s
				4 = 16 s
				5 = 8 s
				6 = 5 s
				7 = 3 s
A01	Request/Info/Reply 2.03 or higher	Acceleration / Deceleration	%u	0 – 65535

A00

The selected time relates to the duration of a speed change from standstill to maximum speed or vice versa. The exact value is calculated as follows:
a = v / t = maximum speed / acceleration time. The new acceleration value is used with the next "S02" command.

Example:
Acceleration index: 3 = 33 s
Maximum ladder speed: 32 m/min = 0.533 m/s

Acceleration value: a = (0.533 / 33) m/s² = 0.0162 m/s²

A01

The selected value is an increment, which is added to or subtracted from the current internal speed value every 10 milliseconds. The maximal internal speed value is 65535. This command have to be sent after a new speed command, if the default acceleration or the A00 value isn't appropriate. Be very careful with this command. Extreme acceleration values are very dangerous.

Example:
Acceleration value: 50
Time for acceleration from 0 to 65535: 65535 / (50 * 100) = 13.1 s
Maximum ladder speed: 32 m/min = 0.533 m/s
Acceleration value: a = (0.533 / 13.1) m/s² = 0.041 m/s²

Category Distance

D00	Request/Reply 1.20 or higher	Actual Distance	%6u	m: 1.20 or higher dm: 2.03 or higher

Category Inclination

I00	Request/Reply 1.30 / 2.03 or higher	Adjustment	%1u	0 No Adjustment
				1 Adjustment possible
I01	Request/Reply 1.30 / 2.03 or higher	Actual Inclination	%u	0 - 180°
I02	Request/Reply 1.30 / 2.03 or higher	Direction	%1u	0 Stop
				1 Up
				2 Down
I03	Request/Info/Reply 1.30 / 2.03 or higher	Program Elevation	%u	0 - 180°

Category Error

Z01	Request/Reply 2.03 or higher	Drive Error	%u	Error Number:
				1 Speed Scan Error (Z00=30)
				2 FU Error (Z00=50)

Bicycle-Ergometer Requests

Category Load

S20	Request/Info/Reply	Load Control	%1u	0 Off

	> 2.04			
				1 On
S21	Request/Reply > 2.04	Actual Rotation Rate	%4.1f	1/min
S22	Request/Info/Reply > 2.04	Program Rotation Rate	%4.1f	1/min
S23	Request/Info/Reply > 2.04	Program Power	%5.2f	Power (W)

Category Distance

D00	Request/Reply > 2.04	Actual Distance	%6u	m

Category Error

Z02	Request/Reply > 2.04	Drive Error	%u	Error Number:
				1 Brake Error