RDS/RBDS C02 and C04 Encoder

Professional – fully featured dynamic RDS/RBDS Encoder

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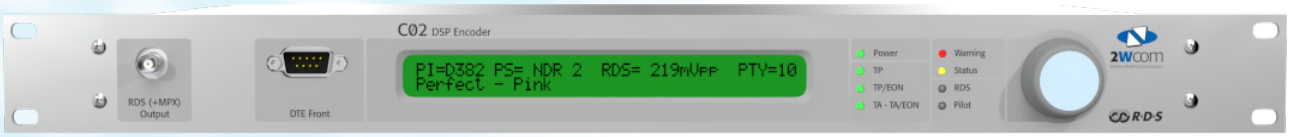
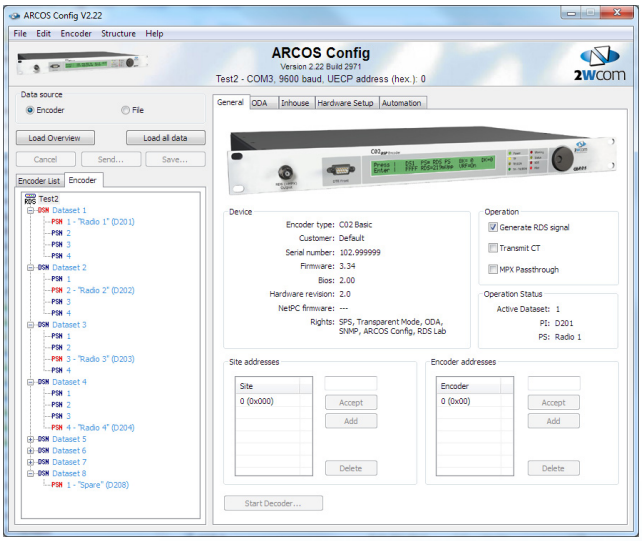


The alternative model C04 is without LCD and Jogwheel

Energy efficient, no moving parts, no fan

- Completely UECP 6.01 compliant - including EON, TMC, ODA, RP and EWS (Early Warning System)
  - Easy to use with: Control Software **ARCOS Config**
  - Manage a complete RDS Encoder network with **ARCOS Network**
- Remote control via RS232 or IP (UECP via TCP or UDP)
- Alarm reporting via SNMP
- Flexible programmable remote control interface - 12 inputs, 11 outputs
- Programmable automation interface for easy integration into existing Studiosoftware
- Advanced Scrolling PS: Configurable to scroll characters or words, scroll-rate adjustable



- Programmable Timer for automatic program switching
- Optional: 5 independent TCP respectively UDP Ports with different port numbers, an opportunity to operate 5 different services with one single encoder (e.g. TMC, Automation System, Control software ARCOS Config, Early Warning, customized protocols like weather data etc.)
- Optional: Decoder integrated in the RDS Encoder - to have the ability to display and check all relevant RDS data before they will go „ON-AIR“/ including TMC/RT+ in plain text
- Optional: Automatic changeover from daylight savings time to winter time and vice versa

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RDS Encoder C0x Highlights

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UECP V6.01 compliant

The C0x is fully compliant to the RDS Forum Technical Specification SPB 490, the RDS Universal Encoder Communication Protocol (UECP) V6.01, supporting all RDS features described in IEC/EN 62106:2000 including EON (allowing up to 16 program services), TMC and complete support for ODA (Open Data Application). With the included ODA support our RDS/RDBS encoder is future proof and does already support the latest RDS applications like RT+ and Emergency Warning Systems.

Providing eight different datasets, the C0x can keep eight different RDS configurations in its memory, which can be switched by either UECP commands or the programmable TTL inputs. It means, the same C0x can be used, for example, to generate RDS for nationwide and regional programs, switching the dataset to adjust RDS contents (PI, PS, AF...) to the actual program being broadcasted, when a regional program starts.

Most sophisticated hardware

Designed and manufactured in Germany with the experience of more than 15 years in the development of professional broadcast products, the C0x is based on full-digital 32 bit DSP technology to provide excellent signal quality and spectral pureness and exhibits exceptional short startup times of less than two seconds after power on.
The encoder features two MPX inputs for the synchronization to the 19 kHz pilot signal, usable e.g. as the main and the backup synchronization source, selectable by the configuration software and switchable via programmable TTL inputs. In case of mono FM broadcasters an internal crystal oscillator will be used for the synchronization with an accuracy of ± 2 Hz.

The encoder additionally features two RDS outputs at the rear side, which can be used to feed e.g. both your main and your backup transmitter with the RDS signal. Another RDS/MPX output can be found at the front side to e.g. temporarily connect a RDS decoder for test purposes.
The firmware of the C0x is field-upgradeable to ensure the opportunity of taking advantage of future firmware enhancements 2wcom may offer and compatibility to forthcoming RDS/RBDS applications.
The encoder comes with a full warranty of two years.

Convenient configuration

The former configuration software for the C0x, Arcos BASIC, has been replaced by the universal configuration software ARCOS Config, which will give you easy access to all RDS encoder parameters and the complete encoder configuration in a convenient way. It allows you to manage and store the connection parameters to your RDS encoders and will give you a fast overview of the configured datasets and PSNs inside the RDS encoder. Apart from that you can also read out the complete RDS encoder configuration, save/archive it (in XML), load the saved configuration later on and send it to an encoder, (re)initializing it completely.

To manage and set up a larger network of RDS encoders, you can optionally purchase ARCOS Network, our turnkey ready solution to organize a complete RDS encoder network in a centralized database. It will help you to overcome the setup difficulties by providing PSN templates, AF and EON-AF editors with plausibility check and copy and paste of already defined structures. For large RDS networks you may also have a look at our Octo IP RDS Server and Router, a RDS data multiplexing solution to centralize all your RDS data streams.

Remote control via RS-232C

The C0x offers four serial ports – three at the rear side and one at the front, which is mainly meant as a convenient port for service and maintenance operations. The protocol for the four ports can be switched between standard UECP and ASCII terminal mode, where the ASCII terminal mode is designated to connect the encoder to an automation system. You can even enable both protocols at the same port, allowing a mix between both operations in case you have only one serial line to your encoder.

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RDS Encoder C0x Highlights

Remote control via IP

The C0x can open up to four IP ports, on which it will accept UECP commands (where the method of the UECP transmission over IP networks will follow the recommendation of the RDS Forum described in Appendix 2 of the latest UECP specification V7.05) and one port, on which it will accept ASCII terminal commands from an automation system. With IP filtering the access can be restricted to a list of up to 5 source IP addresses.
On all five ports the used network protocol can be either TCP or UDP or even both in parallel on the same port, allowing for maximum flexibility and interoperability. IP multicast is supported, too, allowing to join and enter up to 5 multicast addresses.
For integration into an existing network management system the C0x does support the SNMP protocol to report certain events via SNMP traps.

Programmable remote control interface (12 opto isolated inputs, 10 relays)

Using ARCOS Config you are able to program each of the 12 inputs to one of 15 different functions, for example TA (de)activation, dataset switching or MPX input selection. The 10 available relays can be programmed to signal 14 different functions; among others are COM timeout and pilot presence.

Scrolling PS

Scrolling PS enables you to show messages of up to 160 characters (for example artist and title information of the currently played song) via the limited eight character display of a basic RDS receiver (which may not support RadioText) by automatically scrolling the dynamic message a few characters at a time (adjustable) or by word. Words can be centered in the eight character display; if more than one word will fit into the display they will be shown together automatically. Words longer than eight characters will be split into an adjustable number of characters each. The pause between two scrolls can be configured.

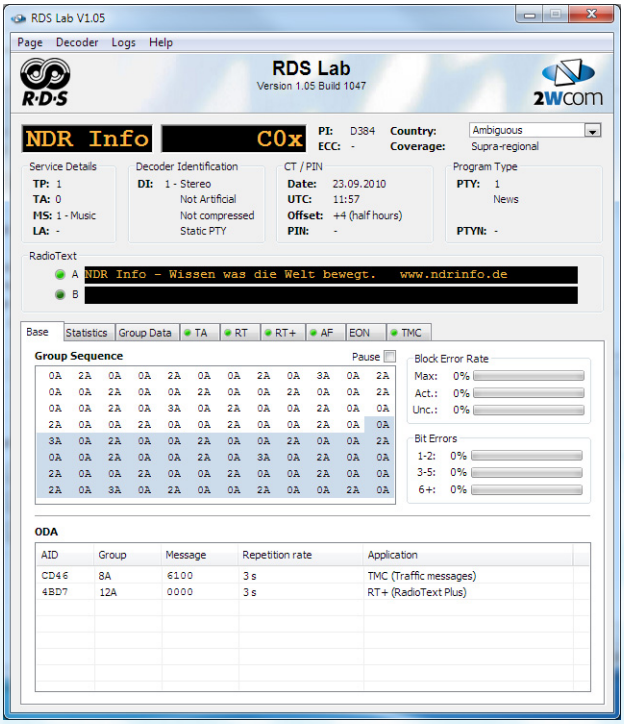
Programmable automation interface

You can connect the C0x by means of one of the serial ports or via the special automation system IP port directly to virtually any playout system. It will accept i.a. configurable ASCII commands to set title and artist information to automatically assemble a corresponding Scrolling PS and/or RadioText message.

Built-in RDS Decoder

The C0x features optionally a built-in RDS decoder, which allows RDS Lab, the premium RDS software decoder from the 2wcom team, to connect to a special TCP/IP decoder port of the C0x.

Now you can investigate, what kind of RDS output your RDS encoder is currently generating without the need for an additional hardware FM/RDS decoder. This is especially useful during the set up phase of your RDS encoder; RDS Lab will even show you RT+ information and TMC messages in plain text.



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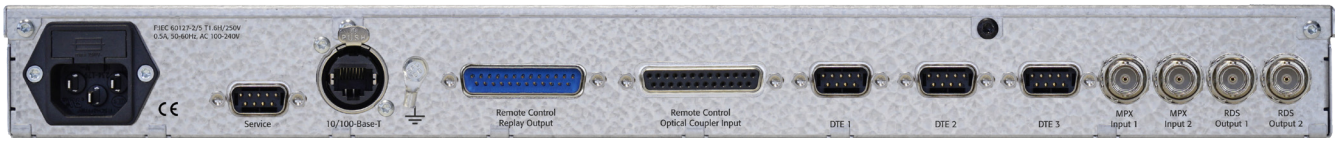

RDS/RBDS C02 and C04 Encoder – Technical Details

RDS signal	according to CENELEC EN 50067 and ARD standard specification 5/3.8 (Leitungsprotokoll) **(optional)** and UECP V 6.01 protocol
Coding	differential and biphase
Modulation	double-sideband amplitude modulation (DSSC) with suppressed carrier
Centre frequency	57 kHz ±6 Hz
Bandwidth	±2.4 kHz
RDS Level	0 .. 8191 mVpp
RDS Pilot	adjustable in steps of <2°, range 0 .. 360°
Linear distortion	<0.5 dB between upper and lower sidebands
Signal to noise rate	>80 dB
Carrier supression	>85 dB

Signal generation RDS amplifier	
Max. output level	16 Vpp
Level variation	<0.5 dB

Synchronisation	
External	to auxiliary pilot of stereo generator or to pilot of MPX signal, frequency 19 kHz ±2 Hz
Internal	automatic switchover to internal crystal oscillator if external pilot fails, frequency 19 kHz ± 2 Hz

Inputs	
Sync/MPX summation	for 19 kHz pilot/FM stereo MPX signal
Connector	BNC unbalanced
Max. input level	9 Vpp
Pilot level	TTL (square wave) or 0.4 Vpp to 1 Vpp (sine wave)
Input impedance	>10 kΩ

Outputs	
57 kHz (+MPX) main output	
Connector	BNC or Lemosa
Type	unbalanced/balanced
Max. load	300 Ω || 5000 pF
MPX summation	link-selected, AC-coupled
Gain	0 dB
Level variation	<0.5 dB
Frequency response flatness	<0.5 dB (40 Hz .. 53 kHz)
Output impedance	<40 Ω

57 kHz (+MPX) test output	rating same as main output
Connector	BNC unbalanced

Interfaces	
Remote control input	12 opto isolated inputs
Connector	25 pole sub-D female 14 programmable functions available

Remote control output	
(Messages)	11 relays (8x SPST, 3x SPDT) (for DC: max. 30 V, 1 A, 10 W) 25 pole sub-D male 15 programmable functions available

Data interfaces	Input/output of RDS data and setup function
Connector	4 serial interfaces, RS-232C (1 front, 3 rear) 9 pole sub-D male
Transmission rate	1200 to 38400 baud, asynchronous
Data format	UECP, Universal Encoder Communication Protocol (EBU SPB 490)

TCP/IP data interface (for model C04 optional available)	Input/output of UECP data and setup functions
Connector	Neutrik Ethercon/RJ45 (rear)
Type	full duplex 10/100 BASE-T
Data format	TCP, UDP, SNMP, IGMP (multicast)

Front panel	BNC test output serial interface, RS-232C
LEDs	Power, TP,TP/EON, TA-TA/EON, Warning, Status, RDS, Pilot
(for model C04 not available):	
LCDisplay	2x 40 characters
Jog wheel	impulse, ENTER button

RDS Features	PS, PI, TP, TA, PTY, PTYN, MS, DI, RT, CT, AF 64 lists, EON, EWS, ODA, TMC, TDC, IH, RP, PIN, SLC, LINKAGE, EPP, ECC, FFG, SPS, ODA, 8 data sets 16 program service numbers optional: Transparent RDS mode: recorded data stream can be played again (advantage for test- and measurement purposes)

General Data	
Power consumption	40 VA
Case dimensions	19“, 1 HU, 310/424/484 mm
Weight	<4 kg
Housing	steel plate (aluminum-zinc coated)
Operating temp. range	0° .. 45°C
Storage temp. range	-40 .. +70°C
Power supply	internal, 90 .. 260 V, 47 .. 63 Hz

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These data are subject to modificatons and amendments.
Errors excepted.

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